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Electrical World

News Issue

MARCH 22, 1947

The American Power Experts Who Are Now in Japan to Advise Gen. Douglas MacArthur. Edward J. Burger, left, Robert M. VanDuzer, Jr., John W. Swaren, and Harry I. Miller

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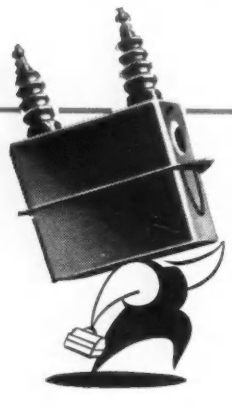
JOHNNY CAPACITOR'S KILOVAR ECONOMICS #1

8 MILLION KILOVARS OF CAPACITORS CAN'T BE WRONG!



JOHNNY SAYS: "Eight million kilovars of capacitors have already been installed in the United States. With system investments in the order of $200 to $500 per kilowatt—and rising—this is the time to reduce your "blue chip" system investment and, at the same time, obtain valuable additional system capacity by means of capacitors. You can get quick delivery—and they can be installed for $10 a kilovar—*or less*"!

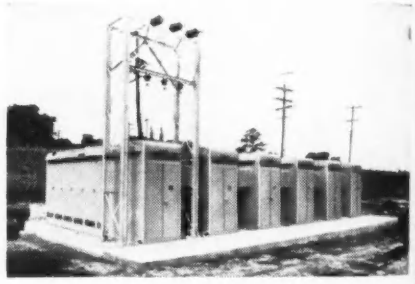
The cost of supplying on-the-spot kilovars has gone steadily downward. Today this cost is only 25% of what it was 15 years ago. Contrast this with today's rising cost of other equipment.

By eliminating the transportation of kilovars through your lines, and supplying them at the load by capacitors, additional line and transformer capacity—up to 10% of peak, sometimes more—is immediately made available.

Such a move can definitely postpone investment in additional generating, transmission, and distribution equipment. At the same time, there are a large number of other system benefits:

1. Reduction of system energy losses and general voltage improvement.

2. Relief on overloads and low voltage conditions on distribution circuits.



3. Reduction in average cost of purchased power.

A General Electric specialist will be glad to work with you on the application of capacitors to your system. For further information ask your G-E representative, or write today to *Apparatus Dept., General Electric Company, Schenectady 5, N. Y.*

APPLICATION OF CAPACITORS IS FLEXIBLE

Capacitors can be installed either on primary or secondary feeders, as a unit for a locality, or at a specific load center—such as a substation. They can be installed in large units with automatic switching, or as smaller units on distribution circuits for voltage improvement. Their cost is low. Installation does not disrupt operation. They are 100% salvageable in case of changing requirements.

THESE COMPANIES ARE NOW USING CAPACITORS

Typical of the companies now taking advantage of on-the-spot kilovar generation are Oklahoma Gas and Electric Company, with capacitors up to 20 per cent of the peak load; Public Service Company of Northern Illinois—10%; Public Service Electric and Gas Company—16%; Illinois Power Company—18%. Why not use capacitors as an economic tool in your system planning?

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ELECTRICAL WORLD

NEWS ISSUE

VOLUME 127 NUMBER 12

MARCH 22, 1947

FTC Blames Copper Scarcity on Heads of Leading Firms

Report to Congress Blasts Executives of Leading American Producers and Asserts That Alarmed by Huge Stockpile in 1946 They Prolonged Labor Troubles to Reduce the Surplus

THE BLAME for the present copper shortage both here and abroad, and the possibility of a copper-buying "panic" in the near future, is laid at the feet of six men, four of them heads of American corporations, by the Federal Trade Commission in a report submitted to Congress last week. The dreaded words "cartel" and "monopoly" are freely used in the voluminous and sharply worded document.

Reason for the report is to "provide a basis for further consideration by the legislative and executive branches of the government of ways whereby American industry and the consumer may receive maximum protection in the future both as to adequacy of supply and reasonableness of price," according to the Commission.

"The copper situation is particularly serious, not only because of the concentration of control of the ore reserves and the productive capacity, but also because the domestic supply is inadequate to meet the demands of high level national production and employment. Furthermore, the production of foreign copper, on which the U. S. will become increasingly dependent, is likewise dominated by a few corporate groups which in the past have operated cooperatively in cartels to regulate production and prices," the report states.

Those accused by the Federal Trade Commission as being "six, or at the most nine men, able to set the operating policies of what is in effect a world monopoly in the production of copper" are listed in the report as Cornelius F. Kelley, chairman of the Anaconda Copper Mining Co.; E. T. Stannard, president of Kennecott Copper Corp.; Louis Cates, president of Phelps Dodge Corp.; A. Chester Beatty, chairman of the boards of Rhodesian Selection Trust, Roan Antelope Copper Mines, Ltd., Mufulira Copper Mines, Ltd., and a director of Rhokana Corp., Ltd.; Robert C. Stanley, chairman of the International Nickel Co., Ltd., and Fred Searls, Jr., vice-president of the Newmont Mining Corp.

The Commission states in the report that Beatty "is the controlling figure in British-controlled Rhodesian Mines," and Searls "having close relationships with J. P. Morgan and Co., is important as liaison between New York banking interests and the American, Canadian, and South African copper mining companies."

Ownership of a large part (41.25 percent) of the nearly 50 percent of known world reserves controlled by American nationals is concentrated in three U. S. mining companies — Anaconda, 23.10 percent, Kennecott, 11.83 percent, and Phelps Dodge, 6.32 percent, the commission's report stated.

Noting that the blame for the reduced

No Comment from Copper Officials Named

Executives of copper producing companies who were named specifically in the Federal Trade Commission's recent report on the copper shortage either declined comment or were unreachable this week. There were strong indications, however, that comment from at least some of these executives would be forthcoming soon.

Cornelius F. Kelley, chairman of the board of Anaconda Copper Mining Co., would not comment without having seen a copy of the report.

Louis Cates, president of Phelps-Dodge Corp., could not be reached. His company made no comment.

Fred Searls, Jr., vice-president of the Newmont Mining Corp., is in North Africa. A Newmont spokesman said the allegation concerning him would have to await his return for comment. Meanwhile, the corporation had no statement to make.

A spokesman for International Nickel declared that no comment could be made since the company does not have access to the FTC report.

Spokesmen for the Kennecott Copper Corp. also declined to comment.

A. Chester Beatty, listed as one of the men able to "set operating policies" of world copper operations, conducts his business from London.

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ON THE ROSTRUM—R. Stafford Edwards, left, president of the National Electrical Manufacturers Association; J. S. Keenan, president of the Canadian Electrical Manufacturers Association; and Frank Jones, president of the Okonite Co., address the recent meeeting of NEMA held at Chicago

world output of copper is generally placed on shortages of labor supply, lowered productivity of labor, and strikes, the commission in its report states that a world-wide stockpile of the metal, about 700,000 tons, at the beginning of 1946 "was viewed with misgivings within the industry. In order to dissipate that stockpile, it would not matter whether the steps taken were direct curtailment of production at the mines through the action of management, or passive curtailment through delays in settling labor disputes which were widely prevalent in industry. When, to the inventory situation, is added the confusion and uncertainties in the field of government controls of copper in the spring of 1946, with the possibility that by mid-year all price controls might be removed with consequent benefit to the producers of copper, it would appear that dominant producers might well consider it to their advantage to permit the continuance of labor difficulties to curtail production, at least until such time as the large stockpile might be drawn down."

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Arbitration Brings Raises

As a result of arbitration, Consolidated Edison System Companies of New York will give all physical employees a raise of 15 cents an hour and all clerical workers 10 cents an hour. In addition, other provisions of the agreement will give all employees an extra 5 cents, and certain employees will receive even higher raises through reclassification of their jobs. The union involved was the Utility Workers Union, C.I.O. Dr. George W. Taylor of the University of Pennsylvania served as impartial chairman of the three-man board.

New York Dealers Asked to Cut Prices of Appliances

Beware of midsummer, E. F. Jeffe, vice-president in charge of sales for the Consolidated Edison Co., New York, indicated in an appeal last week to dealers to operate on lower profit percentages as present trends show that the supply of appliances will equal the demand by midsummer.

More than 800 of the company's cooperating appliance dealers and 100 distributors and company representatives were present at the meeting at which Jeffe pointed out the danger that appliances may soon be priced out of the market to the detriment of the dealers, the manufacturers, and the utility industry.

Intimating that dealers can operate with lower profit margins, he pointed out that from 1941 to 1946 appliance prices jumped as follows: Non-automatic toasters from $2.65 to $7.50, non-automatic irons from $2.25 to $6; glass coffee makers from $3.75 to $8.75; waffle irons from $5.50 to $11; automatic irons from $5 to $13; radios from $18.50 to $50; automatic toasters from $9.50 to $18.50; washing machines from $75 to $115; mixers from $18.50 to $31, and refrigerators from $150 to $220.

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Atomic Power Site Valued

A Federal District Court jury in Yakima, Wash., awarded the Priest Rapids Irrigation District $473,356 for its power plant facilities in condemnation proceedings brought by the government to determine the value of property taken for the Hanford atomic energy plant near Richland, Wash. The value set by the jury was higher than the appraisal of government witnesses.

NEMA Begins Program to Increase Range Sales

The first section of a long range industry promotion program whose initial objective is to prepare the way for 1,000,000 electric range installations each year for the next five years was announced last week by the National Electrical Manufacturers Association's Electric Range Section.

"One phase of our broad industry program," Roger Bolin, chairman, of the advertising committee, said, "is to promote the electric range idea to the school and college home economists. Since most electric range manufacturers have plans of installing electric ranges in school laboratory kitchens, thousands of future homemakers are being taught the modern electric way of cooking. This will prove definitely beneficial to the appliance retailer because of the insistent demand by new housewives for a modern electric range."

To reach effectively the home economists, full page advertisements are scheduled to appear in "What's New in Home Economics," "Practical Home Economics" and "Journal of Home Economics." The first insertion shows the laboratory kitchen with electric ranges of the Athens Senior High School, Athens, Ohio. Other representative laboratory kitchens in high school home economics departments will appear in subsequent advertisements.

"Another part of the program," said Bolin, "is to encourage the building profession to 'wire ahead' so that new homes will be wired for a modern electric range. When hundreds of thousands of new homes are adequately wired, the retailer's market for electric ranges will be broadened even further.

"This campaign is already under way with insertions having appeared in the January issues of leading architectural and building trade publications.

"To help the retailer prepare the way for greater electric range sales, we have developed a very complete book entitled 'Cooking Electrically.' Through simple, everyday, easy to understand language, this book tells the entire story of the ease with which the housewife can become a 'master chef' by cooking the modern electric way," he concluded.

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Iowa Municipals Organize

Municipally owned and operated electric, gas, and water systems in Iowa have organized the Iowa Association of Municipal Utilities. Officers will be elected later.

Municipal and Co-op Systems in Tennessee Valley Organize

S. R. Finley, Electric Power Board of Chattanooga, Heads Association Which Will Provide Information in Varied Fields —Private Power Tactics Assailed—Gordon Clapp on Program

FORMATION of the Tennessee Valley Public Power Association by 138 publicly owned power systems and rural cooperatives in the valley was completed last week at Chattanooga and hailed as a significant step in providing financial, sales promotion, accounting, managerial, and technical information to public power systems.

States R. Finley, general superintendent of the Electric Power Board of Chattanooga, was elected first president of the association. W. H. Saxton, superintendent of the Tallahatchie Valley Electric Power Association, Batesville, Miss., was elected secretary-treasurer.

Vice-presidents were elected to represent each of the five presently existing organizations in the Tennessee valley area. These included E. Bruce Bynum, Memphis Light, Gas & Water Division; Jesse F. Perry, Department of Electricity, Clarksville, Tenn.; M. C. Stewart, manager, Sand Mountain Electric Cooperative, Fort Payne, Ala.; W. W. Jacobs, manager, Cleveland Electric System, Cleveland, Tenn., and L. E. Price, superintendent, Light & Water Department, Tupelo, Miss.

Finley, chairman of the organizing committee, presided at the two-day session, attended by more than 300 delegates, which climaxed a week of meetings of electrical associations and a display of appliances in the Electric Power Board building as part of the "Electrical Center of the South" celebration.

L. J. Wilhoit, chairman of the Chattanooga Electric Power Board, set the keynote at the opening session when he characterized the formation of the association as a significant step in "recapturing the power to use the common heritage of land and water in creating a better way of life."

After tracing the development and growth in distribution of TVA power, Wilhoit sharply attacked the private power industry, charging that lobbying and propaganda were being used in an effort to destroy the TVA and other government "yardstick" projects. He called on responsible members of the private power industry to wrest leadership from the propagandists, lawyers, and lobbyists that now seem to control it.

In speaking of TVA rates as the "birch rod in the cupboard," Wilhoit said that the Republicans will use it just as quickly as the Democrats, and harder now since they are in the majority.

G. O. Wessenauer, manager of power for TVA, traced the progress of the Authority during its 14-year history and said that a suitable market has been obtained for TVA power and customer use had increased to twice the national average.

Thomas H. Allen, president of the Memphis Light, Gas & Water Division, discussed the job of a manager and predicted that much of the "toothpick" construction that has been made in the rural areas "by our organization and yours" will be replaced with stronger construction, located on more reasonable right-of-way and with greater capacity than was originally conceived as necessary. Advocating a sound depreciation and obsolescence policy not based on theories but actual experience, Allen cautioned against failure to pay off debt before plants have worn out.

Lee H. Hill, editor and publisher of ELECTRICAL WORLD, said that the solution of labor relations problems is in the solution of employee relations problems. He said that there is no union relations problem if the employee relations problem is settled. "Employee relations should be such that an employee does not feel it necessary to call upon an outsider," Hill declared.

Apply the same careful study to employee relations as to engineering, production and sales, Hill emphasized as a method for management in labor and employee relations.

The problem of TVA now is to find new sources of power supply and to add capacity, said Gordon R. Clapp, chairman of TVA. Clapp outlined TVA policies and objectives and said that electricity in the region is on a sound basis and use will show a continued increase. He said that TVA power operations earned 4 percent on the net average investment of the past seven years, and that consumers are saving $12,000,000 annually.

J. B. Hodtum, central station engineer of Allis-Chalmers Manufacturing Co., spoke on voltage control on rural lines. P. M. Augestein, commercial engineer of General Electric Co., urged the delegates to meet the bottled gas competition by pointing out to customers the advantage of electrical living. Samuel G. Hibben, director of Applied Lighting for Westinghouse Electric Corp., staged an exhibition of a wide variety of lamps and their uses.

TENNESSEE VALLEY PULIC POWER ASSOCIATION OFFICERS—W. S. Bates, left, E. Bruce Bynum, Floyd Jones, Jesse F. Perry, States R. Finley, M. C. Stewart, K. A. Woltersdorf, W. H. Saxton, W. W. Jacobs, and M. C. Northington

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Bill Lifting Copper Tariff For 2 Years Now in Senate

A Congressional controversy over suspension of the four-cent copper import excise tax moved to the Senate this week after the House passed a bill waiving the tariff for two years.

House argument over the time-length of the suspension was surprisingly brief. The bill went in the hopper with a three-year suspension clause. It was amended to two years and quickly passed.

Both producer and consumer proponents in the Congress admit that there is need for a temporary suspension of the import hurdle, but mining Congressmen favor a one-year waiver while consumer spokesmen advocate a three-year suspension. Likely compromise is two years.

Budenz Says Communists Sponsored 1941 A-C Strike

Testimony of Former Red Editor before House Labor Committee Leads Firm to Fire Christoffel

The House Labor Committee, drafting corrective labor legislation, has before it evidence of Communist participation in the strategy behind the 1941 strike which was called against Allis-Chalmers Manufacturing Co. in West Allis, Wis.

Testimony by Louis F. Budenz, former Communist editor, brought these swift developments:

1. Dismissal by Allis-Chalmers of Harold Christoffel, honorary president of the C.I.O. United Automobile Workers, Local 248, for allegedly calling the 76-day strike in 1941 "at the direction of the Communist party."

2. Investigation of possible perjury by Christoffel and Robert Buse, president of Local 248, who had denied any Communist associations to the committee.

3. Disclosure by Budenz that a mysterious "Comrade Juniper" behind the first Allis-Chalmers strike was a high official of the United Electrical, Radio & Machine Workers, C.I.O., which has contracts in other Allis-Chalmers plants. His name was given the committee in secret.

Deny Communist Leanings

Testifying before the Senate Labor Committee last month, three top U. E. officials — President A. J. Fitzgerald, Secretary-Treasurer Julius Emspak and Organization Director James J. Matles —denied they were either Communists or Communist sympathizers.

Budenz's statements served to support the earlier testimony of Harold W. Story, Allis-Chalmers vice-president, that Communist elements were behind both the 1941 strike and the current one begun last May. Budenz disclosed that Christoffel discussed strike strategy with him and other Communist leaders in 1941 before Germany invaded Russia. The object, according to the company, was to "slow up national defense by retarding the Navy's destroyer program."

Besides firing Christoffel, the company several months ago also dismissed Buse and Joseph Dombeck, Local 248 vice-president, for accusing the company of hiring thugs to mingle with strike pickets. In this connection, employers may get one of their first tests of a revised Wagner Act if the company is accused of an unfair labor practice and new labor legislation is on the books. Congress is considering some means of curbing Communist activities in unions and strikes.

The Allis-Chalmers strike has also widened the breach between U.A.W.-C.I.O. president Walter B. Reuther and his predecessor, R. J. Thomas, who is in charge of the strike. Thomas has accused Reuther of "meddling." Their feud was the subject of a "harmony" session of the U.A.W.-C.I.O. executive board in Louisville this week.

WOULD SUPPORT COMMUNIST— Russ Nixon, Washington representative of the United Electrical, Radio & Machine Workers Union, C.I.O., tells House Labor Committee that he would support a Communist as president of the union if one were elected

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Operation Resumed

Ending a three-months' shutdown for power ditch work and plant repair, the Ellensburg, Wash., municipal hydroelectric plant has resumed operations. The plant has a capacity of 1,500 kw., and Bonneville Power Administration supplies the other 2,500 kw. of demand.

PL/PL

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..... it's coming!

Bolivian 'Holdup' Threatens American Supplies of Tin

Unless U. S. Government tin purchasing agents can break down a quasi-cartel in concentrates in Bolivia shortly, this county will be critically short of the metal by fall. Tin is vital in container, bearing and solder production.

A combine of small tin producers in Bolivia, from whom the U. S. has been buying tin concentrates, are now asking for a 10-cents a pound price increase before signing a new contract. To emphasize their determination, the Bolivians have already sold about half of the concentrates available for 1947 to Argentina, which has no smelting facilities and is evidently holding the raw material for speculative purposes.

The 10,000 tons (metal content) of Bolivian concentrates left for sale to the U. S. must be brought into this country to keep the government-owned Texas City tin smelter in operation. The smelter's output of 3,000 tons of tin a month has been the deciding factor in maintaining adequate supplies of the metal here.

Total permitted uses for tin call for a monthly allocation of about 6,000 tons by the government. The smelter produces half of the supply, imports of pig metal contribute another 1,500 tons, and the remainder is taken from the stockpile.

With Far Eastern production of pig tin crippled by exchange difficulties in Siam, a coal shortage in Malaya and the Netherlands, and shipping shortages, added to the loss of the Texas smelter's output, the U. S. stockpile of the metal would not be able to keep up with a monthly drain of 5,000 tons a month for long. The stocks now amount to about 16,000 tons.

Even with the 10,000 tons of Bolivian metal added, the stockpile will be close to exhaustion by fall. Production in the Far East is expected to pick up by then, however. One American and several Dutch tin dredges are already on the way to Malaya, and several more will leave here in the near future.

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Reappointed to P.S.C.

Gail S. Carter, who served for a time as chairman of the New Mexico Public Service Commission when it was first organized four years ago, has been reappointed to the commission by Gov. Thomas J. Mabry to replace Thomas Truder, who resigned because of ill health. Carter has been serving in the Army and as a staff member of the U. S. Reparations Board in Washington.

Contractors and REA Give Own Stories on Construction

REA's 'Labor Only' Contracts Defended by O'Shaughnessy in Talk before RECA at New Orleans—Wallack Scores Rule as Harmful to Contractors and Co-ops—Cagney President

DIVERGENT VIEWPOINTS of the Rural Electrification Administration and the Rural Electrical Contractors Association were brought out sharply last week as the association held its second annual convention at New Orleans with 150 builders of rural electric lines present.

The REA viewpoint was presented by J. K. O'Shaughnessy, chief of REA's Engineering Division, who asserted that REA itself would like to see all work done on labor and material contracts rateher than on "labor only" contracts as called for by REA's Engineering Memorandum 170.

This memorandum, he explained, was issued only as an expedient when it was proved that contractors were not able to get the equipment needed to do the jobs. "About 50 percent of the labor and materials contracts still left are not completed, and they are not completed because the contractors are not getting the materials. What has happened to this skill in being able to get materials that you contractors have been talking about?" he asked.

"We are getting better labor bids under 170 than we were getting under labor and materials contracts because the contractors will bid on a job, do it, and get out. It will not work 100 percent, we did not expect it to, but it will work most of the time," O'Shaughnessy said.

Contractors in Demand

Commenting on "force account" construction (work done by labor hired by the cooperative), Shaughnessy said "We don't like force account (work) in spite of the many statements that we have fostered it. These accusations are silly. We are not trying to get rid of the contractors. We cannot complete our program without contractors. and I wish we had more of you." He added that because contractors are becoming more selective, REA is not getting the good competitive bidding of past years and that REA does not expect or intend to be involved in labor difficulties involving unions. "That is the job of the contractor."

Paul Wallack, RECA secretary, in his annual report scored REA for Memorandum 170. "We do not think it was the best way to solve the problem. As it is being done on a labor only basis, the cooperative does not have the benefit of the contractor's skill and training in the purchasing of materials. The argument that the contractors would be building up a backlog, charging high prices, and diverting the materials into other channels is a very weak one. The whole REA program would be helped and more lines built if 170 were rescinded."

He also stated that the association feels that REA made a mistake in approving contracts after November 23, 1945, without the "escalator clause" in all such contracts. "To approve some with the clause and some without is inconsistent."

As to force account work, he said, "Many of our contractors are of the opinion that REA is maliciously trying to get rid of the contractor, have all the work done by force account or construction cooperatives, and build a political pork barrel without the interference of competitive bidding. These are strong words, but they express the opinions I have heard from many contractors."

In support of his accusation, Wallack said that he had heard from various contractors that 170 was put into effect "to cause a time delay in awarding contracts and thereby force the contractors to convert their equipment and personnel to other activities." This, he said, would attract the smaller contractors who could be more easily controlled as well as the irresponsible contractor who, through poor work, would give REA the excuse and just cause for stopping the work.

Carl Hamilton, assistant REA administrator, spoke in place of Administrator Claude Wickard, who was unable to leave Washington because of appropriation hearings.

Officers elected were W. P. Cagney, Jr., Contracting & Materials Co., Chicago, president; R. N. Campsey, R. N. Campsey Construction Co., Denver, vice-president; Roy Richards, Roy Richards Consrtuction Co., Carrollton, Ga., vice-president; S. O. Sarkness, Sarkness Construction Co., Fargo, N. D., treasurer; Paul C. Wallack, Wallack Engineering & Construction Co., Tulsa, Okla., secretary; and J. W. Foster, New York, executive secretary.

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Conway, Ark., Buys Unit

Conway, Ark., has awarded a contract for a 1,800-hp. diesel engine and generator for its municipal plant.

BUTTERING THE TOAST—Frank Houston, domestic sales manager, Rochester Gas & Electric Co., butters the toast for a sales breakfast, the first since this old company custom was interrupted during the war. Ruth Landers, Home Service Department, is the supervisor. Salesmen and personnel of the Home Service Department were present, and company officials spoke

Co-op Sells Ark-La Line to Utilities for $3,800,000

Approval of REA Which Financed Construction Needed to Complete Deal—SPA Had Tried to Buy Line

A joint offer by three utility companies to purchase the controversial Ark-La transmission line in Oklahoma and Arkansas has been accepted by government-financed Ark-La Electric Cooperative, Inc., which owns the property.

At a recent meeting in New Orleans, directors of the co-op approved a bid of $3,800,000 for the 192-mile, 154-kv. line. The offer was made by the Southwestern Gas & Electric Co., Oklahoma Gas & Electric Co. and Arkansas Power & Light Co., which on February 14 had bid $3,600,000. Completion of the deal hinges upon its approval by the Rural Electrification Administration, which loaned the co-op funds to build the line during the war.

Under the agreement accepted by the co-op directors, the utilities would acquire the entire line, which extends from Markham Ferry, Okla., to Jones Mills, Ark.; two substations, located at Markham Ferry and at Lake Catherine, Ark.; equipment, tools, and vehicles used by the co-op in operating and maintaining these facilities. The purchase price reportedly would cover, in full, the remainder of the co-op's indebtedness to REA.

The Southwestern Power Administration also has been dickering for the line with annual Interior Department appropriations. Congress last year granted SPA $1,352,415 to purchase the major portion of the line—from Markham Ferry to Nimrod, Ark. The co-op rejected this proposal, apparently because it would not provide sufficient funds to pay out the REA investment in the property.

SPA's budgetary requests for the coming fiscal year originally contained an item of $2,000,000 for "completion of acquisition" of the Ark-La line, but this project was dropped in favor of a request for construction funds in a subsequent revision of the agency's budget. (ELECTRICAL WORLD, February 8, Page 13.)

Completed in 1942, the Ark-La line was built, over the protests of private utilities of the Southwest, for the sole purpose of carrying energy to the government's aluminum plant at Jones Mills. Ten rural electric cooperatives combined to form the Ark-La co-op, which received a $4,320,000 loan from REA for the construction job.

The plant was operated by the Aluminum Co. of America until October, 1945, when it was closed because of the war's ending. The Reynolds Metals Co. since has leased the plant and has been negotiating with the utilities for power to operate it.

Under a temporary lease arrangement, Oklahoma Gas & Electric has been operating a portion of the line as a link in its system between Markam Ferry and Fort Smith, Ark.

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Potter Named to P. U. C.

Kenneth Potter, associate professor of social sciences at Fresno State College, has been appointed to the California Public Utilities Commission to succeed Frank M. Clark, who resigned to enter private business.

LOOKING DOWN ON PROGRESS—The 70,000-kw. steam station of the Pennsylvania Electric Co. at Warren, Pa., provided this aerial picture of the construction of the foundations. In background are the bases for transmission towers

First Long-Term Contract Made by BPA with Utility

Bonneville Power Administration's first long-term contract with a privately owned utility has been approved by Interior Secretary Julius A. Krug.

The contract, which provides for delivery of up to 10,000 kw. of Bonneville energy to the Mountain States Power Co., Albany, Ore., was negotiated over a month ago but was not announced until Secretary Krug had given his approval.

The agreement carries no provision for cancellation prior to the termination of the three-year period, February 1, 1947 to February 1, 1950. Aimed at supplying demands upon the company's system "in excess" of its present generating capacity, it calls for transfer of 8,000 kw. of contract demand at Bonneville's "F" rate. The latter rate includes a demand charge of 75 cents per kw. per month and an energy charge of 2.5 mills per kw.-hr.

Interior officials said the arrangement will supply the company's requirements in excess of its generating capacity in the Willamette Valley area. Demands on the company's system in this area are estimated at approximately 10,000 kw. above available capacity, they said.

Approximately 3,000 kw. of the energy will be transferred in exchange for power supplied by the company for Bonneville's account to the Central Lincoln Peoples Utility District, the City of Bandon, Ore., and the Coos-Curry Electric Cooperative.

The contract further specifies that power supply problems in the Willamette Valley will not be resolved until the federal government builds additional high-voltage transmission facilities in the area. BPA is planning construction of a 230-kv. line to Roseburg, Ore.

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Co-op Control Defeated

A bill which would have placed electric cooperatives under regulations of the Public Service Commission similar to those governing business-managed utilities has been defeated in the Arkansas Senate.

•

Stamford to Add Unit

Connecticut Power Co. will remove three small units from its Stamford station and replace them with a 40,000-kw. unit. The cost will be about $6,000,000, and the new installation is to be ready in 1950.

Reclamation's 6-Year Power Program

HEREWITH ELECTRICAL WORLD presents, in tabular form, a summary of the Reclamation Bureau's projected 1947-1952 power program—to cost $801,070,480—for the 17 Western states in which it is authorized to operate. The program is contained in a report submitted to Congress recently. It entails the installation of 2,752,800 kw. of capacity in 18 existing and 33 new Reclamation plants and in one Army-operated plant. This would more than double the Bureau's existing generating capacity. Tables show significant installations of this program, plus about 2,000,000 kilowatts projected for later years.

In addition, the program calls for an additional 9,645 miles of transmission lines of 23 kv. or greater capacity, with another 4,154 miles of line to be started in the same period. Following, in two tables, are listed the power plants and transmission lines projected by the Reclamation report. See map, pages 16 and 17.

Proposed Generating Plant Installations

Plant	Fiscal Year of Addition	Capacity in Kilowatts: Additional Units	Capacity in Kilowatts: Total Plant
REGION I—Washington, most of Oregon and Idaho, Western Montana and Wyoming			
Grand Coulee	1948	324,000	992,000
Anderson Ranch	1949	27,000	27,000
Grand Coulee	1949	108,000	1,100,000
Grand Coulee	1950	324,000	1,424,000
Lower Scriver	1950	90,000	90,000
Grand Coulee	1951	216,000	1,640,000
Hungry Horse	1951	143,000	143,000
Upper Scriver	1951	30,000	30,000
Palisades	1951	30,000	30,000
Hungry Horse	1952	71,500	214,500
Garden Valley	1952	15,000	15,000
REGION II—Northern and central portions of California and the Klamath Valley in Oregon			
Keswick	1948	75,000	75,000
Shasta	1948	225,000	379,000
Pine Flat	1950	15,000	15,000
Pine Flat	1951	30,000	45,000
Haas	1951	45,000	45,000
Delta (Steam)	1951	80,000	80,000
Balch	1952	21,000	52,000
Wishon	1952	4,000	4,000
Delta (Steam)	1952	80,000	160,000
Fresno (Steam)	1953	90,000	90,000
Bidwell Bar	1953	26,000	26,000
Folsom	1953	60,000	60,000
Delta (Steam)	1953	80,000	240,000
Bidwell Bar	1955	78,000	104,000
REGION III—Southern portions of California and Nevada, most of Arisona and small portions of southwestern Utah and western New Mexico.			
Davis	1949	225,000	225,000
Boulder	1951	82,500	1,117,300
Pilot Knob	1951	11,000	11,000
Pilot Knob	1952	22,000	33,000
Bridge Canyon	1954	1,000,000	1,000,000
Glen Canyon	1955	400,000	400,000
REGION IV—Most of Nevada and Utah, western Colorado, and small portions of Wyoming, New Mexico and Arizona.			
Bear Creek	1950	6,000	6,000
Diamond Creek No. 1	1950	6,000	6,000
Diamond Creek No. 2	1950	17,000	17,000
Ouray	1951	6,000	6,000
Bachelor Switch	1951	4,000	4,000
Diamond Creek No. 2	1951	34,000	51,000
Diamond Creek No. 3	1951	15,000	15,000
Prosser	1951	4,000	4,000
Bluff	1953	26,000	26,000
Echo Park	1953	145,000	145,000
Carson Canyon No. 1	1953	15,000	15,000
REGION V—Texas and Oklahoma, most of New Mexico, the southern half of Kansas, and small portions of Colorado.			
El Vado	1949	10,000	10,000
Chamita	1950	15,000	15,000
Abiquiu	1953	15,000	15,000
REGION VI—North and South Dakota, most of Montana, and the northern half of Wyoming.			
Heart Mountain	1948	5,000	5,000
Boysen	1951	15,000	15,000
Yellowtail	1952	50,000	50,000
Canyon Ferry	1953	36,000	36,000
REGION VII—Nebraska, northern half of Kansas, eastern half of Colorado, and southeastern Wyoming.			
Kortes	1949	36,000	36,000
Mary's Lake	1949	8,100	8,100
Estes	1950	45,000	45,000
Flatiron	1952	41,000	41,000
Quillan	1952	28,500	28,500
Cottonwood	1952	11,500	11,500
Rattlesnake	1952	13,500	13,500
Big Thompson	1952	6,700	6,700

Proposed Transmission Lines

Name of Project	Terminals Sending-Receiving	Length (Miles)	Voltage (Kilovolts)	Capacity of Line (Kilowatts)	Construction complete (Est.)
REGION I					
Yakima	Selah-Chandler	60.2	34.5	12,000	1947
Boise	Black Canyon-C-Line Pump	17	69	10,000	1947
	Anderson-Mt. Home	20	115	45,000	1949
	Mt. Home-Caldwell	70	115	40,000	1949
	Caldwell-C-Line Pump	14	69	10,000	1949
	Caldwell-Gem	15	69	15,000	1949
Boise	Gem Pump-Ont.-Nyssa Pump	19	69	10,000	1949
	Ont.-Nyssa-Vale	21	69	5,000	1949
	Ont.-Nyssa-Dead Ox	22	69	10,000	1949
	Dead Ox-Weiser	8	69/2.3	10,000	1949
	Dead Ox-C-Line	19	69	10,000	1949
Boise-Minidoka	Mt. Home-Minidoka	140	115	20,000	1949
Palisades	Palisades-Shelley	50	115	50,000	1949
	Palisades-Caribou	68	115	25,000	1950
Minidoka-Palisades	Shelley-Minidoka	100	115	50,000	1950

(Continued on page 20)

SEC RULINGS

The Securities and Exchange Commission recently issued a series of orders affecting electric utility companies.

FLORIDA POWER & LIGHT CO.'s proposal to amend its charter has been approved. The utility plans to change its 2,500,000 shares of no par value common stock, all owned by its parent, to 2,000,000 shares without any change in the stated value, and to increase its authorized capital stock to 20,000,000 shares without par value. The company is a subsidiary of the American Power & Light Co. (Release No. 7234).

NORTH AMERICAN CO.'s $11,250,000 sale of the St. Louis (Mo.) County Gas Co. to the Laclede Gas Light Co., also St. Louis, has been approved. The approval was the climax of nearly two years of proceedings, started on April 7, 1945, when the commission found that North American could not retain St. Louis County Gas, an integrated utilities system, with the single integrated system of the Union Electric Co. of Missouri. North American will apply the money received in the sale to prepayment of a portion of its Series G bank loan notes in the principal amount of $26,375,000. Laclede plans to finance the purchase through issuance of $6,500,000 of 3½ percent bonds and a like amount of notes. (Release No. 7236).

MIDDLE WEST CORP.'s application whereby it would pay to its subsidiary, Kentucky Utilities Co., $1,500,000 as a contribution to its common stock capital has been approved. (Release No. 7245).

BUFFALO NIAGARA ELECTRIC CORP. and the Niagara Falls Power Co., a subsidiary of Buffalo, have received commission approval on their joint application for authorization for Buffalo to sell to Niagara certain water rights consisting of the right to take 262.6 cu. ft. per second of water from a hydraulic basin in Niagara Falls. The water rights are presently owned by Buffalo and leased to Niagara, which utilizes such rights exclusively for the generation of hydroelectric power. The consideration for the conveyance and the release from certain obligations now required to be performed by Niagara is $728,415, an amount equivalent to the original cost of the water rights, as recorded on the books of Buffalo. (Release No. 7246).

NORTH AMERICAN CO., its subsidiary, North American Light & Power Co., and the latter's subsidiary, Illinois Power Co. have received commission approval of their agreement reached early in January for the settlement of about $40,000,000 of claims which have been litigated for the past four years. In a preliminary opinion, the commission approved that portion of Plan One, of the comprehensive reorganization plan filed by North American Co. last January, providing for the settlement by the three companies of all claims and counter claims affecting Illinois Power Co. The commission held the settlement is not to be consummated until it has been approved by a Federal District Court. The commission also reserved jurisdiction to determine ultimately the rights of North American Light & Power Co. and its various security holders, including its parent, North American Co. At the request of Illinois Power Co., the commission severed the settlement portion of Plan One filed by North American. Plan One is the first step by North American in an over-all plan providing for its reorganization by disposing of its public utility interests and continuing in a business other than in the public utility field. (Release No. 7238).

INTERSTATE POWER CO.'s proposal to issue and sell two collateral promissory notes of $400,000 each to the Chase National Bank and the Manufacturers Trust Co. of New York has been approved. Interstate Power is a subsidiary of the Ogden Corp. The notes will bear interest of 1¾ percent annually and will mature on December 1, 1947. Proceeds are to be used for Interstate Power's construction program. (Release No. 7264).

ELECTRIC BOND & SHARE CO. has been granted permission to acquire not more than 15,000 shares of common stock of its subsidiary, Pennsylvania Power & Light Co. on the New York Stock Exchange for the purpose of stabilizing the price of the stock. (Release No. 7280).

COMMONWEALTH & SOUTHERN CORP. has been authorized to pay a dividend of $3 a share, or an aggregate of $4,323,741, on outstanding shares of $6 cumulative preferred stock (Release No. 7275).

NEW ENGLAND PUBLIC SERVICE CO. ruling was handed down, calling for the dismissal of motions filed by H. C. Blatchley, Boston, and A. L. Goldfine, Winthrop, Me., which in effect requested modification or vacation of approval by the commission of sale of the company's industrial subsidiaries to Coffin & Burr, Inc., and First Boston Corp. for $16,500,000. SEC said that dismissal of the motion was without prejudice to renewal later if circumstances should so warrant. (Release No. 7265).

MEETINGS

Previously Listed

Southeastern Electric Exchange—Annual Conference, Vinoy Park Hotel, St. Petersburg, Fla., April 3-5; Home Service Conference, Thomas Jefferson Hotel, Birmingham, Ala., May 13-14.

Midwest Power Conference—Palmer House, Chicago, March 31-April 2.

Edison Electric Institute—Annual Sales Conference, Edgewater Beach Hotel, Chicago, March 31-April 3; Engineering Committees, Edgewater Beach Hotel, Chicago, April 28-30.

National Association of Corrosion Engineers—Annual Conference and Exhibition, Palmer House, Chicago, April 7-10.

Northwest Electric Light & Power Association—Engineering and Operation Section, Multnomah Hotel, Portland, Ore., April 9-11; Business Development Section, Olympic Hotel, Seattle, Wash., May 7-9.

Electrochemical Society—Spring Congress Hotel Brown, Louisville, Ky., April 9-12.

Missouri Valley Electric Association—Engineering Conference, Hotel Continental, Kansas City, Mo., April 16-18.

National Rural Electric Cooperative Association—Annual Meeting, Davenport Hotel, Spokane, Wash., April 22-25.

Pennsylvania Electric Association—Meter Committee, Roosevelt Hotel, Pittsburgh, April 10-11; Systems Operation Committee, Hotel Statler, Buffalo 5, N. Y., April 24-25.

VEPCO-I.B.E.W. Contract Signed; Foremen Included

Real Test of State's Anti-Utility Strike Law Lost by Settlement—New Laws May Affect Future Pacts

Virginia's new anti-utility strike law lost a chance for a real test this week when Virginia Electric & Power Co. terminated its contract negotiations peacefully. Settlements with the International Brotherhood of Electrical Workers, A.F.L., were reached not only in behalf of 1,850 production and maintenance workers, but also for 180 first-grade foremen.

The foremen contract is the first between VEPCO and I.B.E.W. It is in short form and runs until next March 1, with the understanding that the company may then reconsider its bargaining relations with the foremen in the light of court rulings and legislation then existing. Negotiations had been in progress since last October, with the parties agreeing to be guided by the Supreme Court's ruling.

Believes Situation Not Covered

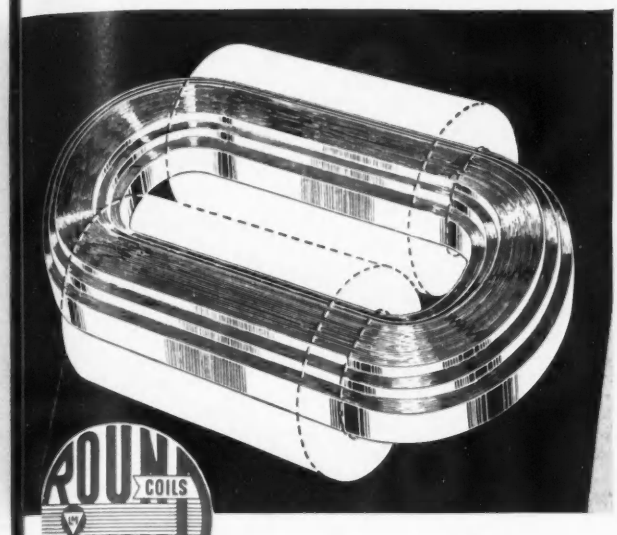
The company, feels, however, that the Supreme Court's decision last week upholding Wagner Act privileges for an independent foremen's union at Packard Motor Car Co. does not cover its situation, T. J. Moore, VEPCO vice-president, explained. At VEPCO, I.B.E.W. represents production and maintenance employees as well as first-line foremen.

By next March, it is expected the status of VEPCO foremen will be clarified by new federal legislation or a Supreme Court ruling in the Jones & Laughlin captive mine case, where the United Mine Workers, A.F.L., seeks to extend its bargaining privileges to mine supervisors. This case is still in the lower court.

Simple in form, the VEPCO foremen's contract covers only five points. These include an "average" $30 monthly wage increase, no-strike-no-lockout clause, third week vacation after 15 years' service, arbitration of grievances, and termination date.

In renewing for one year the contract for production and maintenance workers, which is to expire March 31, VEPCO granted a general wage increase of 11 cents an hour and a third week vacation after 15 years' service. Final step in the grievance procedure was fixed to provide for selection of an arbitrator when the company and union can't agree. Selection will be made by the U. S. Conciliation Service from its labor-management approved list for the southeastern section.

Advantages of th WOUND CORE in L-M Round-Wound Di ibution Transformers



ROUND COILS WOUND CORE REG. U.S. PAT. OFF.

Write for Bulletin 16-G-1

Get the complete story on L-M Round-Wound distribution transformers from this new bulletin. Gives details on construction, specifications, accessories, hangers, and tap changers. Write Line Material Company, Transformer Division, Zanesville, Ohio.

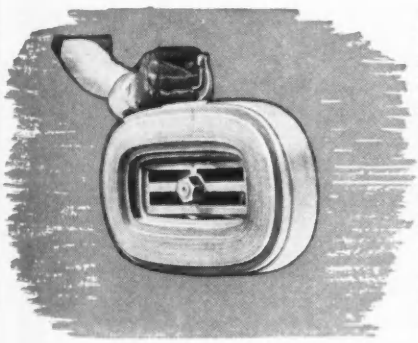
e of the factors which contributes greatly to the ced performance of L-M Round-Wound Transers is the *wound* core construction. Here are of the important advantages:

- Core is wound into an ideal core shape, eliminating wasteful corner sections and providing a continuous flux path.
- Core is wound under tension, in the direction of the grain of the silicon-steel strip. This method eliminates air gaps and results in low exciting current, small dimensions, and light weight.
- Core is not cut, unwound, or disturbed in any way after annealing, which assures freedom from winding stresses, and better uniformity of losses and lower exciting current.

The various steps in the core-winding method are described and illustrated below.

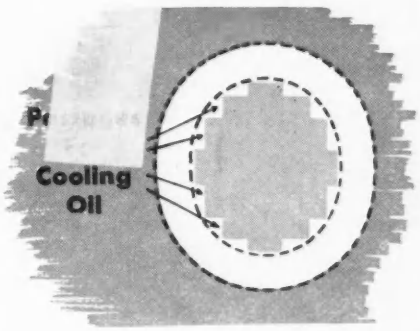
L-M Round-Wound Transformers are available in 1½ to 25 Kva, in all distribution class voltages including 14,400 volts, and meet EEI and NEMA standards.

How the Core Is Wound



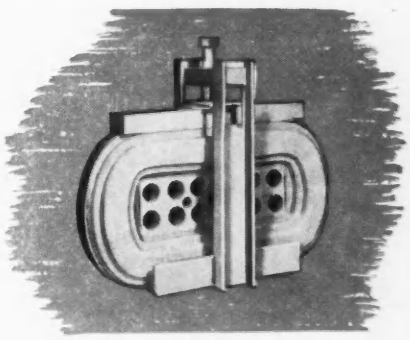
1

Successive varying widths of steel strip are joined and wound with the grain, under tension, on a form of the desired size. The wound core provides a continuous flux path with no wasteful corner sections and practically no air gaps.



2

Result is a wound core with a stepped cross section, cruciform in shape, approximating the round, permitting the winding of *round* coils. This shape, electrically ideal, provides channels between core and coil for free circulation of cooling oil.



3

After the core has been wound, it is clamped for annealing. Core is not disturbed, cut, or unwound or disassembled after annealing. This method assures stable and uniform performance characteristics; freedom from winding stresses.

LINE MATERIAL
TRANSFORMERS

L-M DISTRIBUTION EQUIPMENT INCLUDES: Distribution Transformers • Fuse Cutouts and Fuse Links • Lightning Arresters • Oil Switches • Pole Line Hardware • Line Construction Specialties • Underground Equipment • Fibre Conduit • Street and Airport Lighting Equipment • Wired Radio Control Equipment • Capacitors

Power Development Program

Bureau of Reclamation 1947-1952

INDEX OF EXISTING AND POTENTIAL PLANTS FEDERALLY OWNED OR ON FEDERAL PROJECTS

ARIZONA

1 Boulder (c)
2 Davis (e)
3 Parker (a)
4 Roosevelt (c)
5 Horse Mesa (c)
6 Mormon Flat (c)
7 Stewart Mountain (c)
8 South Consolidated (c)
9 Crosscut Hydro (c) Ic and Steam Plants
10 Coolidge
11 Buttes
12 Horseshoe
13 Glen Canyon
14 Marble Canyon
15 Kanab Creek
16 Bridge Canyon

CALIFORNIA

1 Shasta (a)
2 Keswick (c)
3 Parker (a)
4 Fairview
5 Tower House
6 Spring Creek
7 Table Mountain
8 Iron Canyon
9 New Big Bend
10 Kennedy
11 Bidwell Bar
12 Oroville
13 Elbow
14 New Bullards Bar
15 New Colgate
16 Narrows
17 Garden Bar
18 Monticello
19 Coloma
20 Salmon Falls
21 Folsom River
22 Folsom Canal
23 Sloughhouse
24 Nashville
25 New Melones
26 Tulloch
27 New Don Pedro
28 Pine Flat
29 Hot Springs
30
31 Pit No 4
32 Pit No 6
33 Deer Creek No 1
34 Deer Creek No 2
35 Deer Creek No 3
36 Deer Creek No 4
37 Howells No 3
38 Camp Rogers No 4
39 Rock Creek No 5
40 Cresta No 6
41
42
43 Minna No 1
44 Minna No 2
45 Casoose
46 Hull
47 Round Valley
48 Dos Rios
49 Bell Springs
50 Island Mountain
51 Sequoia
52 Dyerville
53 Branscomb
54 Hollow Tree
55 Tuttle
56 Big Bend
57 Brush Creek
58 Bear River
59 West Point
60 Electra
61 Yosemite
62 San Joaquin (WS) No 15
63 San Joaquin (WS) No 14
64 San Joaquin (WS) No 13
65 San Joaquin (WS) No 12
66 San Joaquin (WS) No 11
67 San Joaquin (WS) No 10
68 San Joaquin (WS) No 18
69 San Joaquin (WS) No 17
70 San Joaquin (WS) No 16
71 San Joaquin (WS) No 9
72 Big Creek (AWS) No 8
73 Big Creek (AWS) No 3
74 Big Creek (AWS) No 4
75 Peart
76 Junction No 2
77 Helms
78 Haas
79 Balch
80 Junction No 1
81 Independence Hennes
82 Stampede
83 Mystic
84 Prosser
85 Carson Canyon No 2
86 Carson Canyon No 1 Walker River
87 Leavitt Meadows
88 Antelope Valley
89 Chris Flat
90 Healdsburg
91 Delta (Steam)
92 Siphon Drop (a)
93 Pilot Knob
94 San Diego
95 Klamath River No 1
96 Klamath River No 2
97 Klamath River No 3
98 Klamath River No 4
99 Wishon (c)
100 Fresno (Steam)

COLORADO

1 Slater Falls
2 Juniper
3 Cross Mountain
4 Lily Park
5 Echo Park
6 Green Mountain (c)
7 Gore Canyon
8 Grand Valley (c)
9 Lake Fork
10 Cimarron (3 Plants)
11 Ouray
12 Kendall Mountain
13 Lime Creek
14 Emerald Lake
15 Clear Creek Falls
16 Santa Maria Intake
17 Rio Grande
18 Santa Maria Outlet
19 Wagon Wheel Gap
20 Notch Trail
21 Marys Lake (c)
22 Estes Park (c)
23 Quillan
24 Cottonwood
25 Rattlesnake
26 South Beaver Creek
27 Dory
28 Tremont
29 Blackhawk
30 Centenial
31 Tucker
32 Golden Gate
33 Clear Creek
34 Watertown
35 Two Forks
36 Lake George
37 Ten Mile Creek
38 Twin Lakes
39 Pine Creek No 2
40 Morrison
41 Riverside
42 Northrop No 1
43 Northrop No 2
44 East Portal, Salida
45 Salida
46 Salida-Wellsville
47 Wellsville-Howard
48 Howard-Coaldale
49 Texas Creek
50 Canyon City-Pueblo
51 White Water
52 Gerrard
53 Counsellor
54 Iron Mountain
55 Big Thompson
56 Sugar Loaf
57 Elbert
58 Granite
59 Wapaco
60 Princeton

IDAHO

1 Priest River
2 Cabinet Gorge
3 Enaville
4 Kooskia
5 Upper Scriver Creek
6 Lower Scriver Creek
7 Garden Valley
8 Black Canyon (a)
9 Boise River (a)
10 Anderson Ranch (e)
11 Bliss
12 Minidoka (a)
13 Asotin
14 Nez Perce
15 Wolf Creek
16 Hells Canyon
17 Lower Lemhi
18 Challis
19 Palisades (e)

MONTANA

1 Rock Island Gorge
2 Bonlan
3 Fish Creek
4 Hungry Horse (e)
5 Flathead No 2
6 Flathead No 3
7 Flathead No 4
8 Lyon
9 Canyon Ferry
10 Portage
11 Fort Peck (d)
12 Mission
13 Yellow Tail

NEBRASKA

1 Gavins Point
2 Harlan

NEVADA

1 Boulder (c)
2 Davis
3 Lahontan (c)
4 Last Chance

NEW MEXICO

1 Elephant Butte (a)
2 Willow Creek No 1
3 Willow Creek No 2
4 Willow Creek No 3
5 Willow Creek No 4
6 El Vado
7 River Plants 1, 2 & 3
8 Abiquiu
9 Caballo
10 Hooker
11 Chamita

NORTH DAKOTA

1 Crosby
2 Des Lacs
3 Garrison

OREGON

1 Little Indian Creek
2 Lower Grande Ronde
3 Catherine Creek
4 Mason
5 Twickenham
6 McNary
7 Arlington
8 John Day Rapids
9 The Dalles
10 Bonneville
11 Detroit
12 Niagra
13 Mill City
14 Nez Perce
15 Wolf Creek
16 Hells Canyon
17 Mehama
18 Quartz Creek
19 Bear Creek
20 Vida
21 Deerhorn
22 Hayden Bridge
23 Lookout Point
24 Black Canyon
25 Rouge River (19 Plants)
26 Cove No 2 (c)

SOUTH DAKOTA

1 Gavins Point
2 Fort Randall
3 Big Bend
4 Oahe
5 Miller

TEXAS

1 Martin
2 Palafox
3 Falcon Site
4 Marshall Ford

UTAH

1 Flaming Gorge
2 Red Canyon
3 Split Mountain
4 Desolation
5 Rattlesnake
6 Dewey
7 Moab
7 Arlington
8 John Day Rapids
9 The Dalles
10 Bonneville
11 Detroit
12 Granite Point
13 Asotin
14 Little Goose
15 Monumental
16 Gage Island
17 Roza
18 Prosser
19 Upper Wapata
20 Lower Wapato
21 Rock Island
22 Rocky Ford
17 Sevier Bridge 1 & 2
18 Leamington
19 Bates

WASHINGTON

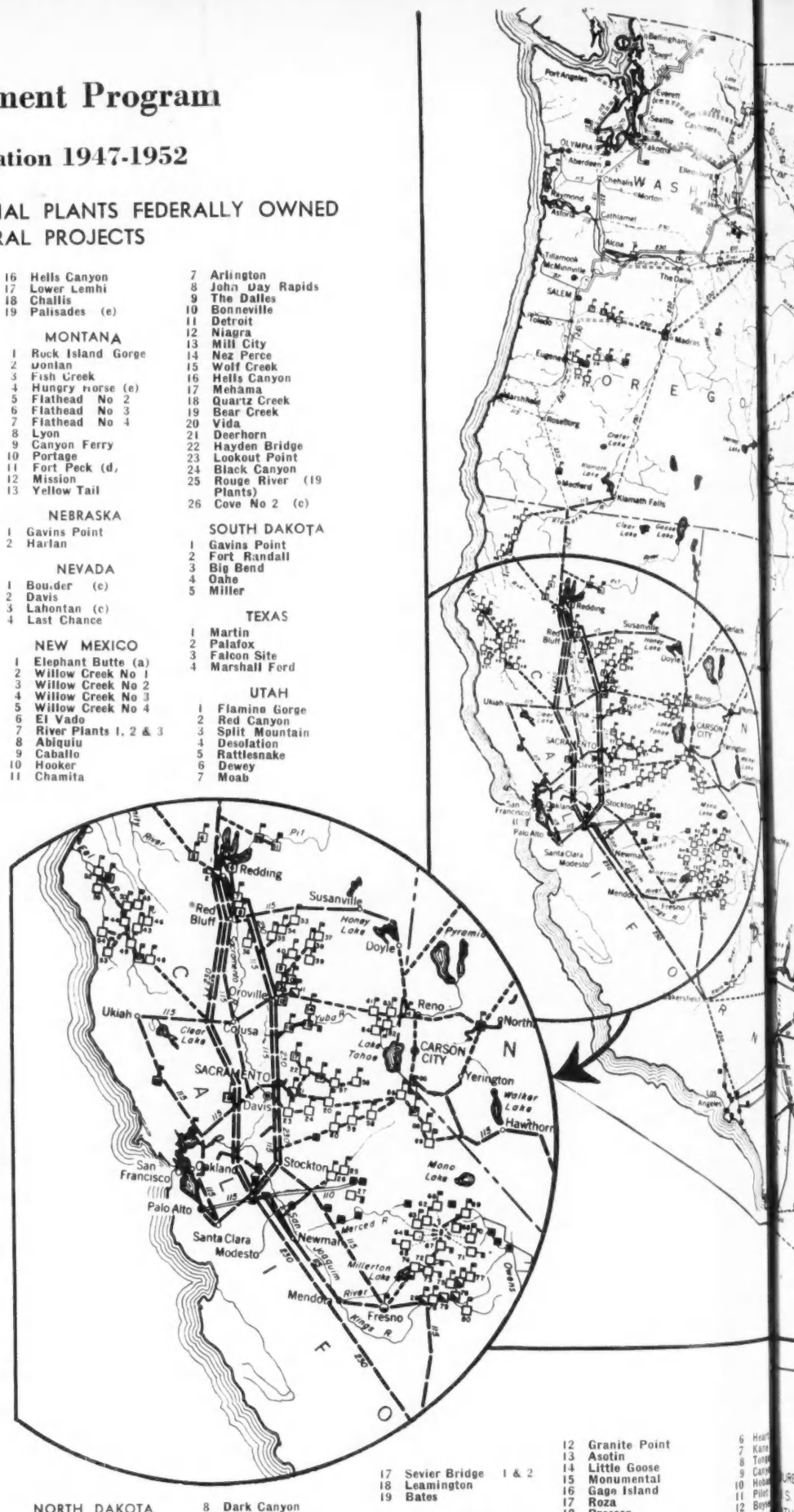
1 Grand Coulee ((b)
2 Foster Creek
3 Chelan
4 Rocky Beach
5 Priest Rapids
6 Umatilla Rapids
7 Arlington
8 John Day Rapids
9 The Dalles
10 Bonneville
11 Z Canyon

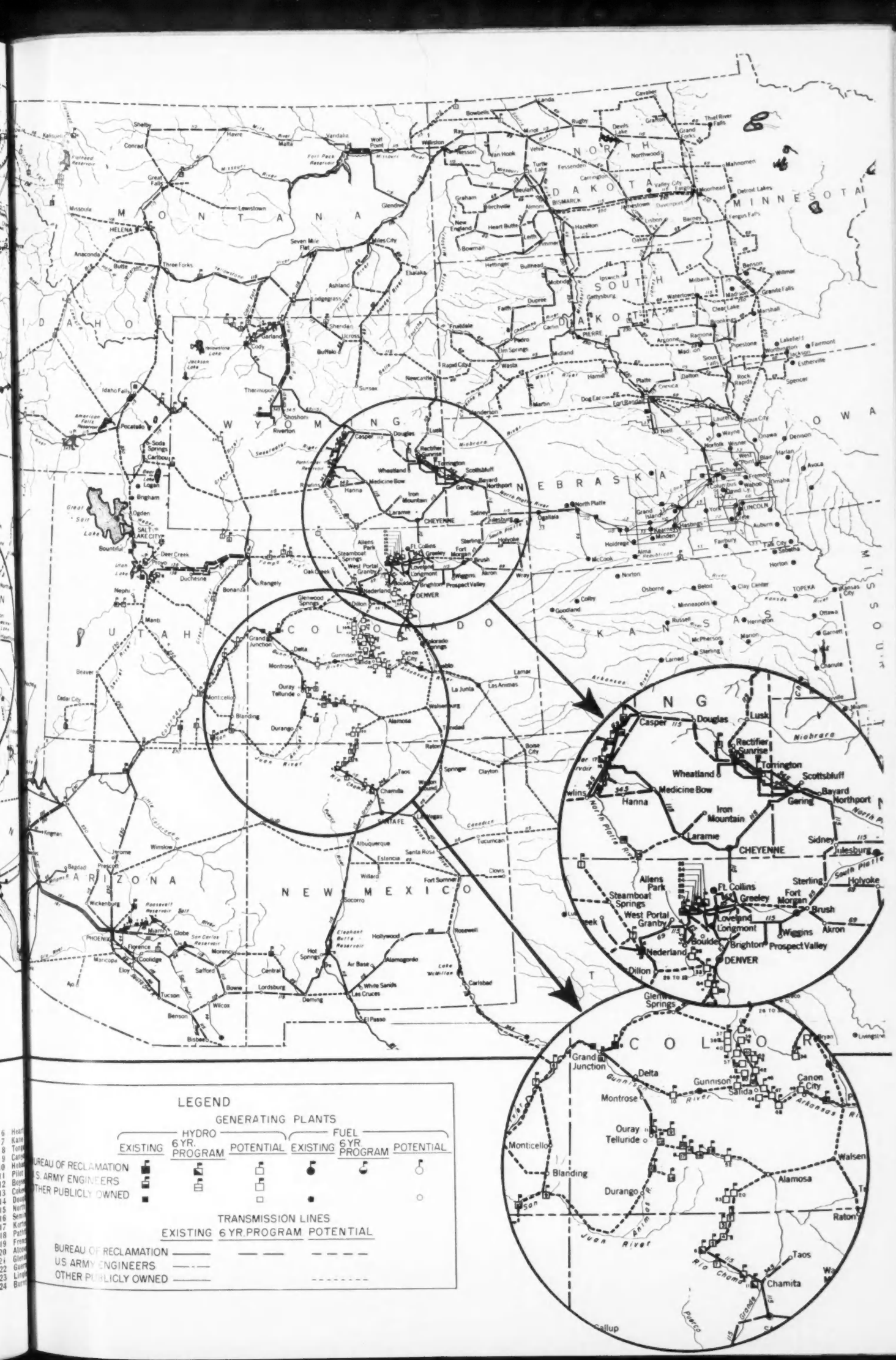
WYOMING

1 Hunter Mountain
2 Thief Creek
3 Sunlight Creek
4 Bald Ridge
5 Shoshone (a)
8 Dark Canyon
9 Bluff
10 Goosenecks
11 Slick Horn Canyon
12 Great Bend
13 Hurricane Plants Virgin Bench Lake Warmer Valley
14 Deer Creek
15 Diamond Creek No's 1, 2, 3 & 4
16 Spanish Fork (3 Plants) (c)

STATUS OF POWER PLANTS

(a) Operated and power marketed by Bureau of Reclamation
(b) Operated by Bureau of Reclamation, power marketed by others
(c) Located on Bureau of Reclamation projects, operated and power marketed by others
(d) Operated by others, power marketed by Bureau of Reclamation
(e) Under construction by Bureau of Reclamation




LEGEND
GENERATING PLANTS
HYDRO
FUEL
EXISTING
6 YR. PROGRAM
POTENTIAL
EXISTING
6 YR. PROGRAM
POTENTIAL
BUREAU OF RECLAMATION
U.S. ARMY ENGINEERS
OTHER PUBLICLY OWNED
TRANSMISSION LINES
EXISTING
6 YR. PROGRAM
POTENTIAL
BUREAU OF RECLAMATION
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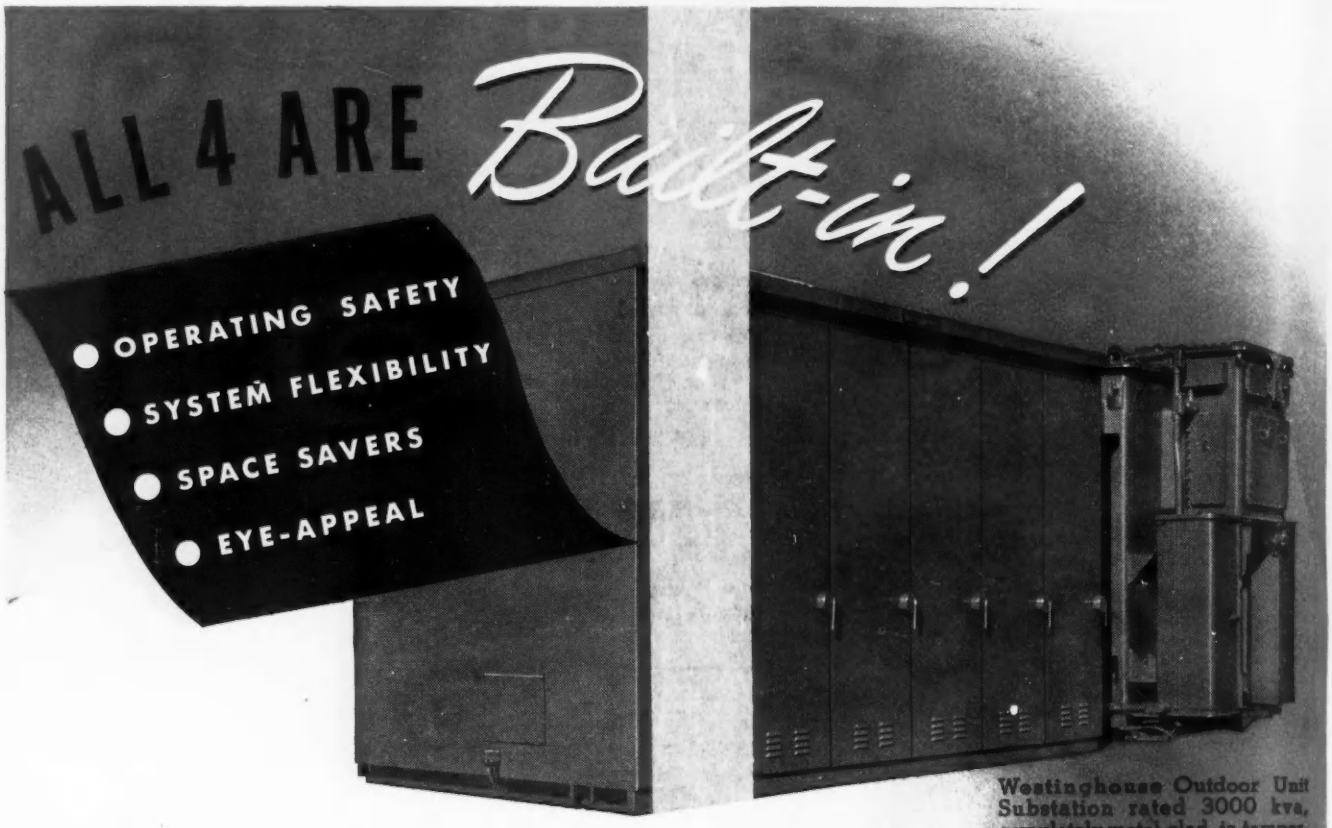
OTHER PUBLICLY OWNED
MONTANA
IDAHO
WYOMING
NEBRASKA
NORTH DAKOTA
SOUTH DAKOTA
MINNESOTA
IOWA
KANSAS
COLORADO
UTAH
ARIZONA
NEW MEXICO
Casper
Douglas
Lusk
Rectifier
Sunrise
Torrington
Wheatland
Scottsbluff
Medicine Bow
Hanna
Bayard
Gering
Northport
Iron Mountain
Laramie
CHEYENNE
Sidney
Julesburg
Allens Park
Ft. Collins
Greeley
Sterling
Holyoke
Steamboat Springs
Fort Morgan
West Portal
Granby
Loveland
Brush
Longmont
Akron
Wiggins
Boulder
Brighton
Prospect Valley
Nederland
DENVER
Dillon
Glenwood Springs
Grand Junction
Delta
Gunnison
Salida
Canon City
Montrose
Ouray
Telluride
Monticello
Blanding
Durango
Alamosa
Walsenburg
Raton
Taos
Chamita
Gallup
Colorado River
Gunnison River
Arkansas River
San Juan River
Rio Chama
Rio Grande
Puerco
Niobrara
North Platte River
South Platte River

ALL 4 ARE *Built-in!*

- OPERATING SAFETY
- SYSTEM FLEXIBILITY
- SPACE SAVERS
- EYE-APPEAL



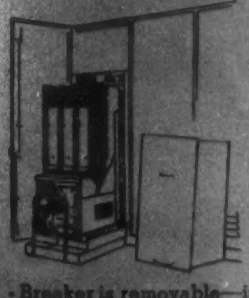
Westinghouse Outdoor Unit Substation rated 3000 kva, completely metal-clad, is tamper-proof and safe in any suburban location.

WHEN YOU SPECIFY WESTINGHOUSE UNIT SUBSTATIONS

More and more power companies are installing Westinghouse Unit Substations because they meet these four basic requirements of the modern substation—with fully built-in features:

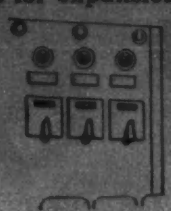
1. **Safety of operation and maintenance**—assured by removable breakers, steel barriers, positive interlocking, "De-ion" arc interruption, insulated busses, loading-by-copper temperature (makes full transformer thermal capacity safely available).
2. **System flexibility**—provided by interchangeable, "Unitized" switchgear units, allowing additional feeder units to be applied simply. Unit capacities can be selected to meet existing needs, yet provide for expansion.
3. **Compactness**—twice the capacity of conventional open substations in half the space lowers real estate costs and permits location in areas otherwise unavailable for substation use.
4. **Modern appearance**—close-coupled throat connection, with units of uniform height, gives the "eye-appeal" so important in residential areas.

These and other reasons—mobility . . . versatility of application . . . the advantages of "Unitized" switchgear . . . make Westinghouse Unit Substations the answer in distribution planning. For complete information, call your Westinghouse office, or write for B-3238 to Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pa. J-07119



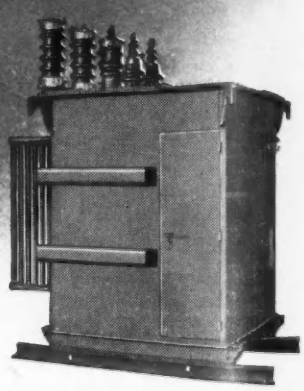
• Breaker is removable—in minutes—with full safety to operator.

• Minimum installation time and over-all cost.



• Loading-by-copper temperature makes full thermal capacity of transformer safely available.

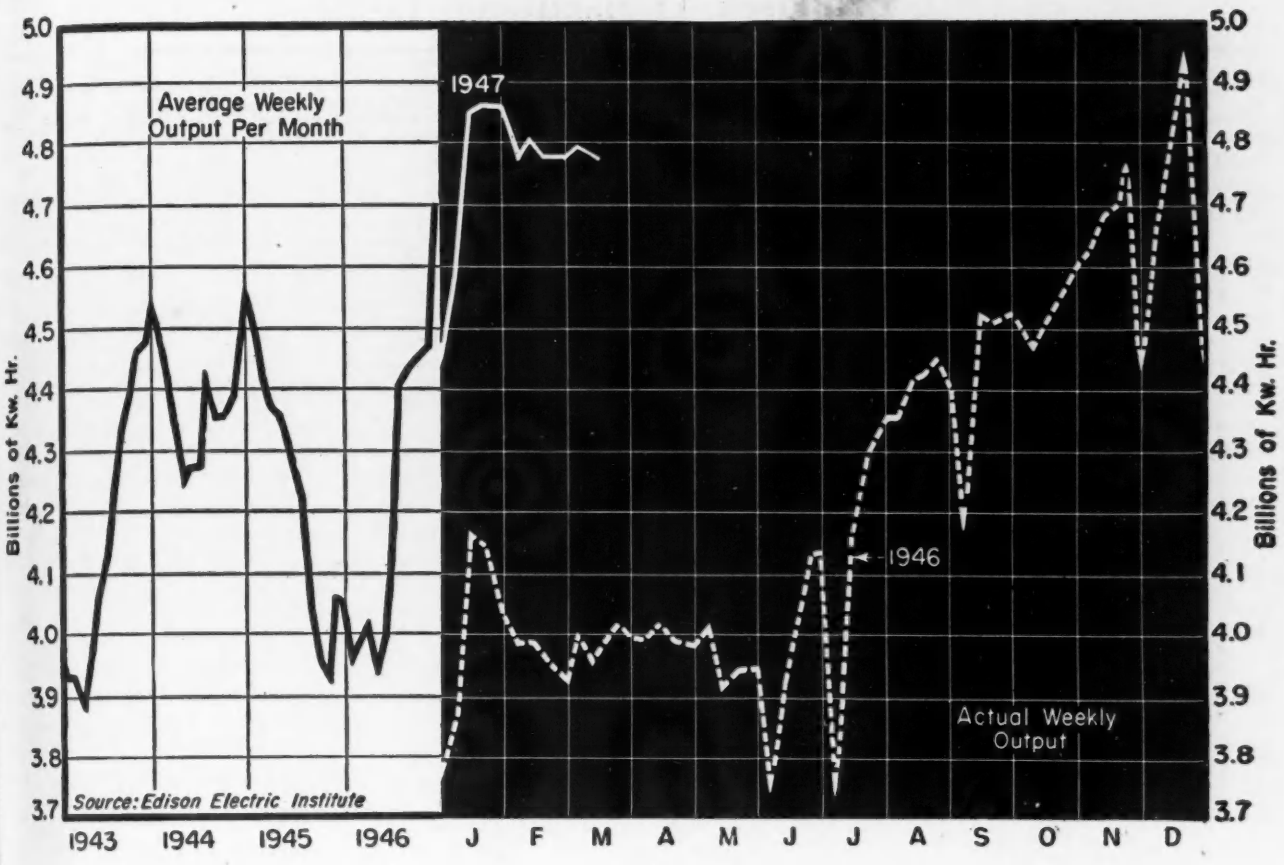
• No costly structure loss—entire substation can be easily moved to new location.



For Single Feeder Substations—the last word in "Packaged Power"—the Westinghouse CSP Power Transformer performs all functions of a conventional substation.

Westinghouse **UNIT SUBSTATIONS**

PLANTS IN 25 CITIES . . . OFFICES EVERYWHERE



Reed Holds Trade Pacts Vital to American Industry

The United States reciprocal trade agreements program is of vital importance to American business and to world trade, Philip D. Reed, chairman of the board, General Electric Co., said at a luncheon of the Sales Executive Club held recently in New York.

Stating that American business men must give their full support to the program and must let Congress know that they are behind it, he stated that "it is no problem to get business support of reciprocal trade agreements in principle, but business men cannot be expected to accept reductions on their own products unless they are protected by limitations on the program.

"Total reductions must be held within limitations that will not be harmful to domestic business, and the agreements must include a so-called "escape clause" under which the President of the United States will have the right to alter or fully restore any tariff rate which experience indicates is resulting in or threatens to result in substantial injury to any American industry.

"In addition, procedure will be set up under which any company or industry which considers itself entitled to relief will be given prompt and sympathetic hearing by the Tariff Commission, which will then report its finds and recommendations to the President . . .

"It must be brought home to the American people," Mr. Reed said, "that foreign trade is good for the United States in the same way that domestic trade is good for it; that it increases the supply of goods available to supply human wants . . ."

•

Baltimore Utility Proposes $50,000,000 Expansion

Consolidated Gas, Electric Light & Power Co. of Baltimore proposes to spend approximately $50,000,000 in the coming three years for construction and equipment.

Among the projects proposed are the addition of a 60,000-kw. unit to the Riverside power plant to boost its capacity to 180,000 kw. and the addition of two 60,000-kw. units to the Westport plant which now has a capacity of 182,500 kw. Six substations are to be erected and five are to be enlarged.

•

Municipal Plant Defeated

A proposal that Cuba, Mo., issue $150,000 in bonds to finance the construction of a municipal power plant has been defeated in a special election.

Output Recedes Again

The electric output curve moved slightly downward again during the week ended March 15, 1947, according to figures released by the Edison Electric Institute.

The amount of electrical energy distributed by the light and power industry during the week amounted to 4,763,843,000 kw.-hr., comparing with 4,786,552,000 kw.-hr. during the preceding week. During the week ended March 16, 1946, the amount of electrical energy distributed totaled 3,987,877,000 kw-hr., this year's figure representing an increase of 19.5 percent.

Weekly Output, Millions Kw.-Hr.

1947		1946		1945	
Mar. 15	4,764	Mar. 16	3,988	Mar. 17	4,398
Mar. 8	4,787	Mar. 9	3,953	Mar. 10	4,446
Mar. 1	4,797	Mar. 2	4,000	Mar. 3	4,472
Feb. 22	4,778	Feb. 23	3,923	Feb. 24	4,474
Feb. 15	4,778	Feb. 16	3,949	Feb. 17	4,472
Feb. 8	4,801	Feb. 9	3,983	Feb. 10	4,505
Feb. 1	4,777	Feb. 2	3,983	Feb. 3	4,539
Jan. 25	4,856	Jan. 26	4,034	Jan. 27	4,577
Jan. 18	4,857	Jan. 19	4,145	Jan. 20	4,588
Jan. 11	4,853	Jan. 12	4,163	Jan. 13	4,614
Jan. 4	4,574	Jan. 5	3,865	Jan. 6	4,427
1946		1945		1944	
Dec. 28	4,442	Dec. 29	3,759	Dec. 30	4,226

Percent Change from Previous Year

	Mar. 15	Mar. 8	Mar. 1
New England	+11.5	+13.0	+10.3
Mid-Atlantic	+12.1	+13.6	+12.3
Central Industrial	+23.3	+23.8	+24.4
West Central	+18.4	+18.1	+16.5
Southern States	+24.2	+27.2	+24.8
Rocky Mountain	+10.6	+13.0	+10.5
Pacific Coast	+20.2	+23.1	+21.7
Total United States	+19.5	+21.1	+19.9

Proposed Transmission Lines

Name of Project	Terminals Sending-Receiving	Length (Miles)	Voltage (Kilovolts)	Capacity of Line (Kilowatts)	Construction complete (Est.)
REGION I	(*Continued from page 13*)				
Mt. Home.....	Garden Valley-Black Canyon	41	69	10,000	1948
	Lower-Scriver-Garden Valley	7	115(Const)	90,000	1948
	Upper Scriver-Lower Scriver	4	115(Const)	30,000	1948
	Garden Valley-Eagle	42	115	165,000	1950
Hoback.....	Hoback-Canyon	18	115	....	1952
Hell's Canyon.....	Hell's Canyon-Caldwell	120	230 (115 initial)	150,000	1949
Boise-Minidoka-Palisades	Caldwell-Shelley	310	230	150,000	1953
REGION II					
Central Valley....	Shasta-Oroville	100	230	150,000	1947
	Oroville-Elverta	56	230	150,000	1948
	Elverta-Delta	75	230	150,000	1949
	Shasta-Delta	231	230	300,000	1950
	Delta-P. G. & E.	5	230	150,000	1949
	Keswick-Elverta	158	115	75,000	1949
	Elverta-Stockton	60	115	75,000	1949
	Stockton-Delta	19	115	75,000	1949
	Delta-Hetch-Hetchy	4	115	150,000	1949
	Delta-Steam-Delta	8	115	225,000	1951
	Elverta-Antelope	11	115	150,000	1949
	Galt-Delta Cross Chan.	11	115	75,000	1949
	Stockton-Oakdale	30	115	75,000	1949
	Oakdale-Fresno	96	115	75,000	1952
	Newman-Mendota	60	115	75,000	1949
	Keswick-Red Bluff	41	115	75,000	1949
	Red Bluff-Colusa	70	115	75,000	1949
	Colusa-Oroville	36	115	75,000	1949
	Colusa-Ukiah	82	115	75,000	1950
	Colusa-Davis	51	115	75,000	1950
	Elverta-Davis	20	115	75,000	1950
	Davis-Vallejo	48	115	75,000	1950
	Vallejo-Healdsburg	50	115	75,000	1951
	Healdsburg-Ukiah	40	115	75,000	1951
	Delta-Santa Clara	42	115	75,000	1949
	Santa Clara-Palo Alto	27	115	150,000	1949
	Santa Clara-Alameda	42	115	75,000	1949
	Alameda-Vallejo	27	115	75,000	1950
	Delta-Newman	45	115	75,000	1949
	Red Bluff-Mineral	43	115	75,000	1951
	Mineral-Susanville	48	115	75,000	1951
	Susanville-Doyle	45	115	75,000	1951
	Delta-Westley	23	69	75,000	1949
	Westley-Patterson	10	69	75,000	1949
	Delta-ContraCosta	17	69	20,000	1949
	Antelope-Roseville	2	22		1949
Feather River	Bidwell Bar-Oroville	8	230	150,000	1952
	Delta-Bakersfield	233	230	150,000	1953
	Shasta-Klamath	125	230	150,000	1949
Kings River.....	Pine Flat-Fresno	24	115	75,000	1949
	Fresno-Mendota	36	115	75,000	1950
	Pine Flat-Balch	10	115	75,000	1949
	Balch-Haas	5	115	75,000	1949
	Haas-Wishon	2	115	75,000	1949
	Pine Flat-Lerdo	62	115	75,000	1948
American River...	Folsom-Antelope	10	115	75,000	1949
REGION III					
Davis Dam.....	Davis-Parker No. 1	83.0	230.	112,500	1949
	Davis-Parker No. 2	83.0	230.	112,500	1949
	Parker-Gene	3.0	230	90,000	1947
	Tucson-Benson	50.0	115	20,000	1949
	Benson-Bisbee	50.0	115	5,000	1950
	Benson-Lordsburg	110.0	115	10,000	1951
	Lordsburg-Deming	60.0	115	7,000	1952
	Phoenix-Tucson	122.0	115	45,000	1948
	Phoenix-Prescott	130.0	115	25,000	1949
	Davis-Kingman	5.0	69	10,000	1952
	Davis-Kingman	30.0	69	10,000	1947
	Davis-Needles	20.0	69	5,000	1952
	Parker-Drop No. 4	138.0	161	60,000	1948
	Gila-Yuma	13.8	34.5	10,000	1947
Davis Dam.....	Davis-Los Angeles	236	230	150,000	1954
Boulder Canyon	Boulder-Boulder City	6.8	69	15,000	1947
Pilot Knob	Pilot Knob-Gila Drop No. 4 Line	2.5	161	40,000	1949
	Pilot Knob-Gila Drop No. 4 Line	2.5	161	40,000	1952
Bridge Canyon	Davis-Bridge Canyon	85.0	230	200,000	1950
	Bridge Canyon-Phoenix	200	230	150,000	1953
	Phoenix-Bowie	200	115	45,000	1953
	Safford-Morenci.....	32.6	115	....	1953
Glen Canyon.....	Glen-Canyon-Bridge Canyon	160	230	150,000	1953
Marble Canyon...	Marble Canyon-Phoenix-Bridge Canyon Line	154	230	150,000	1953

Name of Project	Terminals Sending-Receiving	Length (Miles)	Voltage (Kilovolts)	Capacity of Line (Kilowatts)	Construction complete (Est.)
REGION IV					
Central Utah.....	Thistle-Echo Park	209	138	35,000	1950
	Diamond Creek-Geneva	35	138	50,000	1951
	Echo Park-Salt Lake City	245	138	35,000	1954
	Echo Park-Rock Springs	97	138	35,000	1953
	Echo Park-Rangely-Bonanza	75	115	25,000	1950
	Vernal-Duchesne	60	69	10,000	1952
Ouray.....	Ouray-Grand Jct.	110	115	20,000	1950
Carson River.....	Yerington-Carson Canyon	60	115	25,000	1951
	Wellington-Tonopah	180	115	32,000	1953
REGION V					
Rio Grande.....	Alamogordo-Hollywood	39	115	20,000	1947
	Elephant Butte-Socorro	75	115	10,000	1948
	Socorro-Albuquerque	75	115	10,000	1950
	Hollywood-Roswell	65	115	10,000	1953
Middle Rio Grande	El Vado-Abiquiu	46	115	35,000	1950
	Abiquiu-Chamita	20	115	35,000	1950
	Chamita-Santa Fe	30	115	35,000	1950
	Chamita-Taos	45	34.5	3,200	1950
	Santa Fe-Albuquerque	62	115	22,800	1950
	Albuquerque-Willard	60	34.5	3,000	1950
	Santa Fe-Las Vegas	67	115	20,000	1952
	Las Vegas-Springer	72	115	19,000	1952
	Las Vegas-Santa Rosa	60	115	23,000	1953
	Santa Rosa-Tucumcari	60	115	23,000	1953
REGION VI					
Wyoming.....	Heart Mtn.-Garland	31	69	10,000	1948
Shoshone-Heart Mtn.	Garland No. 2-Kane	25	69	15,000	1949
Boysen, Riverton..	Riverton Line-Boysen	14	34.5	5,000	1947
	Boysen-Thermopolis	18	115	25,000	1951
	Thermopolis-Kane	100	115	25,000	1951
	Boysen-Shoshoni	11	34.5	5,000	1951
	Thermopolis-Kane	100	34.5	5,000	1951
	Thermopolis-Casper	123	115	40,000	1952
Yellowtail.....	Kane-Yellowtail	50	115	15,000	1949
	Yellowtail-Ucross	95	115	40,000	1952
	Ucross-Buffalo	18	69	5,000	1952
	57 Kv. Line-Pump Plant	2	69	5,000	1951
	Yellowtail-Livingston	160	115	40,000	1952
	Yellowtail-Miles City	142	115	40,000	1952
	57 Kv. Line-Pump Plant	2	57	5,000	1951
	34.5 Kv. Line-Pump Plant	3	34.5	5,000	1951
	34.5 Kv. Line-Pump Plant	3	34.5	5,000	1951
	34.5 Kv. Line-Pump Plant	1	34.5	5,000	1951
Fort Peck.....	Wiota-Substation	6	34.5	5,000	1948
	57 Kv. Line-Pump Plant	4	69	1,000	1948
	Fort Peck-Williston	139	115	40,000	1948
	Glendive-Miles City	78	115	40,000	1948
	57 Kv. Line-Pump Plant	4	69	1,000	1949
	57 Kv. Line-Pump Plant	3	69	5,000	1950
	57 Kv. Line-Pump Plant	1	69	5,000	1950
	Fort Peck-Glasgow Bench	30	69	10,000	1951
	57 Kv. Line-Pump Plant	2	69	5,000	1951
	57 Kv. Line-Pump Plant	2	69	5,000	1951
	57 Kv. Line-Pump Plant	2	69	5,000	1951
	Williston-Nesson	28	34.5	5,000	1951
	115 Kv. Line-Pump Plant	1	115	5,000	1951
	115 Kv. Line-Pump Plant	2	115	5,000	1951
	Miles City-Ashland	69	69	5,000	1952

(*Continued on page 22*)

MANUFACTURERS & MARKETS

Annual Reports Show Effects of Strikes, OPA Pricing on Manufacturers' Returns

Effects of last year's strikes and inadequate prices under OPA as well as new product developments highlight the General Electric and Westinghouse annual reports issued last week. Consolidated statements show that each company ended the year with a net operating loss but, in each case, tax refunds brought stockholders a small dividend.

Effects of the strike and of governmental controls were cited by Charles E. Wilson, president of General Electric. He stated, "In the first quarter, due to the strike which closed the plants for nine weeks, there was a loss from sales equivalent to 45.7 cents on each dollar of sales. In the next six months, despite a sales volume of an annual rate of nearly three quarters of a billion dollars, the income of sales was 3.3 cents on each sales dollar; and in the fourth quarter, when the effects of price increases began to be felt and sales were at the rate of over a billion dollars, the income from sales was equivalent to 5.9 cents per dollar of sales. Thus, for the full year, the loss from sales was equivalent to one-tenth cent per dollar of sales. By way of contrast, in the five years ended with 1940, when the average annual sales volume amounted to $319,000,000, the company's income from sales averaged 15.5 cents on each dollar of sales."

Net sales billed in 1946 amounted to $679,078,216. Loss sustained from this sales volume amounted to $534,224, Mr. Wilson pointed out. Tax refunds gave the company a net available for dividends of $43,039,589, which is equivalent to $1.49 per share of common stock.

Westinghouse's statement showed an operating loss of $59,768,997 for 1946 compared with an operating profit of $48,443,839 for 1945. The loss, likewise, was due to the four-month strike, inadequate prices due to OPA ceilings, as well as expenses incurred due to the company's expansion program, Gwilym Price, president, pointed out. However, net income for 1946 was $8,823,846, equal to 68 cents per share of common stock, and compares with net income of $26,744,055 or $2.08 per share in 1945. This net income was made possible only by the carry-back features of the federal tax laws, Mr. Price stated.

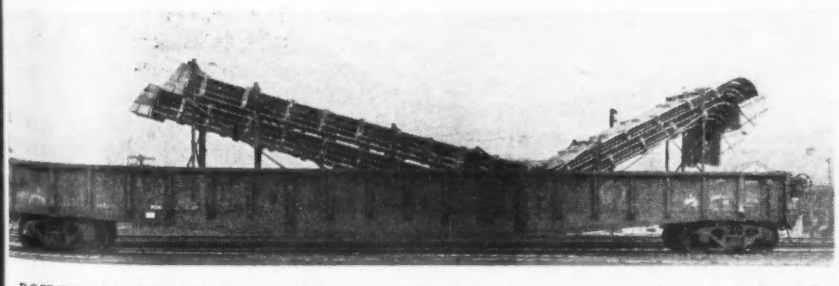
He also stated that orders received during the year established a new peace-time record amounting to $624,672,985. Unfilled orders at the end of 1946 likewise hit a new peak, totaling $589,583,459.

On the production front the company reports a steady gain toward the goals set for the second half of 1946 despite strikes and material shortages. Output, as represented by net sales billed, totaled $301,671,788.

At Buffalo, production of the company's new all-steel motor was well under way at the end of the year. The company expects the demand for industrial motors to total more than 6,000,000 during the next five-year period. To meet its share, Westinghouse is planning production on a basis 80 percent higher than in the years of 1937-39, and 50 percent above the peak peace-time year of 1940. At electric appliance plants in Mansfield, Ohio, and Springfield, Mass., where a $13,500,000 expansion program is nearing completion, output at the end of the year had not yet approached the goals originally set, largely because of material shortages.

At East Pittsburgh, production of heavy equipment, such as large generators, motors and circuit breakers, was progressing at a rate of 30 percent greater than 1941. The Sharon, Pa., transformer division was operating 20 percent ahead of the average rate for 1941. Fractional-horsepower motors were being completed at Lima, Ohio, and Fairmont, W. Va., at a rate of 45 percent above the 1941 average. The meter division at Newark, N. J., at the end of 1946 was producing watthour meters at a rate of 27 percent greater than its 1941 average, while output of electrical indicating and recording instruments was at a rate more than double the pre-war peak, it was stated.

The report points out that, in spite of immediate difficulties, research and engineering projects continued in 1946.



BOILER TUBES—The first of six car loads of boiler tubes for what are believed to be the largest natural circulation boilers ever to be installed in France are shown leaving the Beaver Falls, Pa., plant of Babcock & Wilcox. They will be installed in the Paris Gennevilliers station and required special rail routing due to the height of the tubing in the cars. During the war one of the station's turbines burst, probably due to overloading, and took the roof off the building. The station is being completely rehabilitated and will be brought back to its pre-war capacity of 350,000 kw. The three new boilers being shipped by B & W are of the radiant type, of special design, and will supply steam for a 100,000-kw. turbine. Each boiler will produce 530,000 lb. of steam per hour at a temperature of 960 deg. F_a and will operate at a pressure of 1,325 psi.

•

First Unit Comes Off Line

A new chapter in Manitoba's industrial history was written last month when the first distribution transformer to be made in this province—or anywhere in the west—was hoisted to the top of a pole in a farmer's yard near Dugald. It was also the first transformer to come off the production line

in the St. Boniface plant of Pioneer Electric Co., which has contracted to supply hundreds of units to the Manitoba Power Commission for its farm electrification program.

•

Battery Shipments Advance

Shipments of the storage battery division of the Philco Corp. in the first two months of 1947 were 30 percent greater than a year ago, John Ballantyne, president, has announced. Incoming orders up to the end of February increased 33 percent and prospective new business is about one-third greater than at the beginning of the year. Mr. Ballantyne revealed production capacity had increased 50 percent.

•

Boiler Plant Improvements

An expenditure of $1,500,000 for machinery replacement and improvement of its Barberton, Ohio, plant has been approved by Babcock & Wilcox Co. Present equipment will also be relocated to expedite production and to minimize material handling.

2,000,000 FM Sets Given As Goal for Present Year

Radio manufacturers will produce at least 2,000,000 frequency modulation sets this year, virtually a tenfold increase over those turned out in 1946, R. C. Cosgrove, president of the Radio Manufacturers Association and vice-president of the Crosley Corp., stated at a meeting of the American Marketing Association's radio group in New York. Mr. Cosgrove stated that table and console models equipped with FM will run 1,000,000 each and estimated retail volume at about $225,000,000.

Declaring that radio prices are too high, he said that they will undergo a substantial reduction, adding: "With or without FM, good table models will sell for an average of $50 and consoles will run from $175 to $200."

He reported that 136 FM stations are now in operation, 426 construction permits have been issued by the Federal Communications Commission, 211 conditional grants have been issued, 118 applications are set for hearings before the commission and 174 pending applications are being processed.

During 1946 production of radio sets broke all previous records for the industry, according to the RMA. Industry information brought out that production of all types of radio receivers in 1946 exceeded 15,000,000. The largest pre-war production was 13,642,334 in 1941.

•

Welding Awards Announced

Announcement has been made by the American Welding Society of the 1947 A. F. Davis Undergraduate Welding Award, consisting of four cash prizes, totalling $700, to be given to the authors and publications for the two best articles on welding published in undergraduate magazines between July 1, 1946, and April 1, 1947. A prize of $200 will be given to the author or authors of the best article on welding and a similar award of $200 will be given to the publication in which this article appears; the second best article will receive $150 and the publication a similar amount. The time limit of April 1 represents a permanent change from the previous closing date of July 1 for this annual contest.

Proposed Transmission Lines

(*Continued from page 20*)

REGION VI (Continued)

Name of Project	Terminals Sending-Receiving	Length (Miles)	Voltage (Kilovolts)	Capacity of Line (Kilowatts)	Construction complete (Est.)
Fort Peck	57 Kv. Line-Pump Plant	2	69	5,000	1952
	57 Kv. Line Pump Plant	1	69	5,000	1952
	57 Kv. Line-Pump Plant	2	69	5,000	1952
	Glendive-Williston	105	115	40,000	1954
Canyon Ferry	Shelby-Havre	104	115	40,000	1951
	Canyon Ferry-Livingston	102	115	40,000	1952
	Canyon Ferry-Great Falls	70	115	40,000	1952
	Great Falls-Shelby	94	115	40,000	1952
	Three Forks-Butte	63	115	40,000	1952
Garrison	Beulah-Garrison	25	115	40,000	1947
	Williston-Beulah	154	115	40,000	1948
	Garrison-Bismarck	65	115	40,000	1949
	Bismarck-Heart Butte	55	69	10,000	1951
	Bismarck-Fargo	188	115	40,000	1952
	Garrison-Minot	55	115	40,000	1952
	Minot-Grand Forks	204	115	40,000	1952
	Devils Lake-Carrington	58	115	40,000	1952
	Carrington-Fessenden	31	69	5,000	1952
	Minot-Velva	22	69	5,000	1952
	Minot-Williston	148	69	5,000	1952
	Washburn-Turtle Lake	15	69	5,000	1952
	Heart Butte-Beulah	165	69	10,000	1953
	Leith-Heart River	24	69	5,000	1953
	Heart Butte-Almont	12	69	2,000	1953
	Carrington-Oakes	125	115	40,000	1953
	Oakes-Barney	56	69	15,000	1953
	Oakes-Lisbon	35	69	5,000	1953
	Garrison-Oahe	205	230	150,000	1954
	Bismarck-Hazelton	47	69	10,000	1954
	Rugby-Bowbells	130	69	10,000	1954
	Fargo-Davenport	22	69	5,000	1954
	69 Kv. Line-Pump Plants	55	69	5,000	1954
Ft. Randall-Oahe	Ft. Randall-Ethan	64	115	40,000	1949
	Ethan-Brookings	125	115	40,000	1952
	Brookings-DeSmet	40	115	40,000	1952
	Ft. Randall-Elk Point	110	69	15,000	1952
	Sioux City-Sioux Falls	90	115	40,000	1952
	Lake Preston-Watertown		115	40,000	1952
	Ft. Randall-Oahe	140	230	150,000	1953
	Big Bend-Miller	58	230	150,000	1953
	Miller-DeSmet	70	115	40,000	1953
	Dolton-Parker	16	69	5,000	1953
	Coleman-Argonne	47	69	10,000	1953
	Madison-Ramona	9.5	69	5,000	1953
	Colman-Tyler	47	69	10,000	1953
	Oahe-Wasta	142	115	40,000	1954
	Mobridge-Wasta	235	69	5,000	1954
	Eagle Butte-Carlin	24	69	1,000	1954
	Faith-Pumps	15	69	1,000	1954
	Elm Springs-Fruitdale	68	69	5,000	1954

REGION VII

Name of Project	Terminals Sending-Receiving	Length (Miles)	Voltage (Kilovolts)	Capacity of Line (Kilowatts)	Construction complete (Est.)
Kendrick	Seminoe-Caspe	62	115	25,000	1948
	Medicine Bow-Sinclair	60	34.5	5,000	1948
	Seminoe-Rawlins	34	69	7,500	1949
	Seminoe-Sinclair Oil	33	34.5	1,000	1948
	Casper-Stanolind Pumping Plant	11	69	1,000	1948
Colorado-Big Thompson	Brush-Sterling	35	115	25,000	1948
	Sterling-Holyoke	50	69	10,000	1948
	Estes-Granby	38	115	25,000	1949
	Loveland-Greeley	20	115	20,000	1949
	Green Mtn.-Oak Creek	75	69	10,000	1949
	Estes-Valmont	35	115	25,000	1949
	Brighton-Greeley	92	69	10,000	1950
	Flatiron-Valmont	27	115	50,000	1951
	Flatiron-Greeley	28	115	150,000	1953
	Brighton-Denver	16	115	50,000	1953
	Brush-Yuma	51	69	10,000	1949
	Yuma-Holyoke	63	69	10,000	1950
	Greeley-Brighton	35	115	50,000	1949
	Sterling-Sidney	45	115	25,000	1949
	Allen's Park-Nederland	40	34.5	3,500	1950
Missouri Basin	Casper-Gering	164	115	15,000	1949
	Gering-Sidney	80	115	25,000	1949
	Sidney-North Platte	150	115	10,000	1950
	O'Neil-Ft. Randall	40	115	50,000	1948
	Laramie-Iron Mountain	35	115	7,500	1949
	Ft. Randall-Columbus	160	230	150,000	1953

NEWS ABOUT PEOPLE

Delaware Utility Assigns New Operating Duties to Grubb

Announcement has been made of the appointment of Raymond K. Grubb as assistant operating manager, electric, of the Delaware Power & Light Co., Wilmington.

Following graduation from the Uni-

R. K. GRUBB

versity of Delaware, Mr. Grubb became identified with the local utility company as a cadet engineer. He was responsible for electrolysis work within the company from 1933 to 1939 when he was transferred to the electrical engineering department as engineering assistant. In 1945 he was appointed assistant electrical engineer in the development engineering department, and the following year became assistant superintendent of the transmission and distribution department, the position he held until his present appointment.

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▶FRANCIS H. MURPHY, who recently retired as consulting engineer for the Portland General Electric Co., Portland, Ore., after 35 years with that organization, has opened an office of his own as consulting engineer. He will specialize in electric wiring installations, illumination and street lighting.

▶G. C. JOHNSON has been named a member of the board of directors of the Sacramento (Calif.) Municipal Utility District, succeeding Frederic K. Elkus, who died shortly after he was elected to the board last November. Mr. Johnson will represent rural and agricultural areas on the board. The S.M.U.D. took over Pacific Gas & Electric Co. facilities in the area January 1.

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Neal to Head Westinghouse Pacific Coast Operations

Robert A. Neal, vice-president of the Westinghouse Electric Corp., has been named general manager of the company's expanding Pacific Coast operations. Appointment of a chief executive officer for the Pacific Coast, reporting directly to the president, is dictated by expansion of the company's opera-

R. A. NEAL

tions there and involves no change in the personnel or duties of those now in the company's employ in that section.

Now in his 37th year with Westinghouse, Mr. Neal has been a leading figure in the development of switchgear equipment, fostering improvements that have enabled power companies to meet the increasing demands for electric energy at steadily decreasing consumer costs.

Recipient in 1937 of the Westinghouse Order of Merit, the company's highest award for meritorious achievement, Mr. Neal was named vice-president in 1944.

E. C. Stone of Pittsburgh Will Retire on April 1

Edmund C. Stone, vice-president and general manager, Duquesne Light Co., Pittsburgh, Pa., will retire from active service on April 1 after 36 years of continuous service with the company.

Mr. Stone entered the employ of the Westinghouse Electric Corp. as an engineer on transformer design, serving in

Blank & Stoller

E. C. STONE

that capacity from 1905 to 1911. He then became identified with the Allegheny County Light Co. as engineer of cable operation and two years later was made system operator, Duquesne Light Co., serving in that capacity until 1919, when he was appointed assistant to the general manager. In 1922, Mr. Stone was made planning engineer and five years later system development manager. From 1931 to 1938, he served as assistant to the president, Philadelphia Co. and subsidiary companies, and in the latter year was elected vice-president and general manager, Duquesne Light Co., the position from which he will retire on April 1.

As first system operator of the company, Mr. Stone developed and put into effect methods of operation of the power system by which the system, previously operated in isolated sections, was combined into a single coordinated unit. A pioneer in the field of long range comprehensive planning for power system development, Mr. Stone, in his capacity as first system planning engineer of the

company, created a long range plan for the future power system which established all of the essential engineering principles upon which the system has been developed to its present capacity.

During the period from 1922 to 1930, when the engineering development of electric power systems was advancing by leaps and bounds, Mr. Stone had an active part in these developments as chairman of various engineering committees of the American Institute of Electrical Engineers and the National Electric Light Association. He is a fellow of the American Institute of Electrical Engineers and has served as chairman, Pittsburgh Section, director and vice-president of that organization. He was chairman of the engineering national section of the National Electric Light Association in 1927-29. He is a past-president of the Pennsylvania Electric Association and served for several years on the advisory committee of the International Electro-Technical Commission.

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▶ R. B. LEE has joined Florida Power Corp. as research engineer, reporting to the director of operating departments. Mr. Lee has spent 15 years in combustion engineering work and in his new position will assist the chief engineers in conducting tests on power plant operations and fuels.

▶ SAMUEL BERMAN, associate director of the Waugh Laboratories, New York, has been made the recipient of the Edward Longstreth Medal for 1947 by the Franklin Institute. Presentation will be made next month.

▶ CHARLES S. REDDING, president of Leeds & Northrup Co., Philadelphia, received the honorary degree of doctor of science at the mid-winter commencement exercises of the University of Pennsylvania.

▶ CLIVE E. BAUGH has been appointed to direct Pacific Gas & Electric Co.'s division of electric distribution engineering, succeeding S. J. LISBERGER, retired. Mr. Lisberger will continue to serve the company temporarily in a consulting capacity.

▶ GLENN YOUNG has been appointed manager of the power sales department of the Kansas City Power & Light Co., Kansas City, Mo., succeeding FRANK A. GRAHAM, retired. Mr. Young has been identified with the company since 1926. Mr. Graham started with the engineering department of the company in 1913.

Williams Made Foreign Business Vice-President

S. Riley Williams, who has been associated with the Worthington Pump & Machinery Corp., Harrison, N. J., since 1920, has been elected vice-president in charge of foreign business.

From 1920 until 1941 Mr. Williams resided in Europe, where he was successively managing director of the Worthington Associated Co. in Spain, of its Associated Company in France, and general European manager. In 1941 he returned to the United States, and during the recent war served as assistant to the vice-president in charge of operations. In 1945 he was appointed director of international business.

S. R. WILLIAMS

In his new capacity he will have responsibility for the sale of Worthington products for export, as well as the administration of Worthington Associated Companies in South America and Europe. He will make his headquarters at the home office in Harrison.

OBITUARY

▶ JOSEPH M. COFFEY, vice-president of the Mica Insulator Co., Schenectady, N. Y., died on March 2 in that city at the age of 55.

▶ ABRAHAM L. CAPPERS, manager of the Republic Light & Power Co., Republic, Wash., for 25 years until he resigned in 1931, died on February 28 in that city.

▶ FREDERICK T. VAUX, who was associated with the Adams & Westlake Co., Elkhart, Ind., for more than 71 years, died on February 15 in the Henrotin Hospital in Chicago. He was 88 years old. Mr. Vaux was at one time vice-president and treasurer of the company and he remained a director after his retirement from active business in 1923.

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John S. Tritle

John S. Tritle, retired vice-president and general manager of the Westinghouse Electric Corp., died on March 7 in St. Petersburg, Fla., at the age of 74. Mr. Tritle was associated with Westinghouse during most of his adult life. Following graduation from Yale University he entered the electrical contracting business, in which he continued for eight years. It was at the close of the St. Louis World's Fair that he became identified with the Westinghouse company as manager of the Kansas City district, and when in 1915 the St. Louis and Kansas City offices were consolidated, he assumed charge of both. In 1922 he was made manager of the merchandising department, a division of the general sales department.

In 1925 when a separate department was made of the merchandising business, he was selected to be general manager of the merchandising department directing engineering and manufacturing as well as sales work of that department with headquarters in Mansfield, Ohio. Four years later he was called to the East Pittsburgh offices as vice-president in charge of manufacturing operations. In 1931 he was made vice-president and general manager, in charge of manufacturing, sales and engineering operations.

Mr. Tritle was a past-president of the National Electrical Manufacturers Association.

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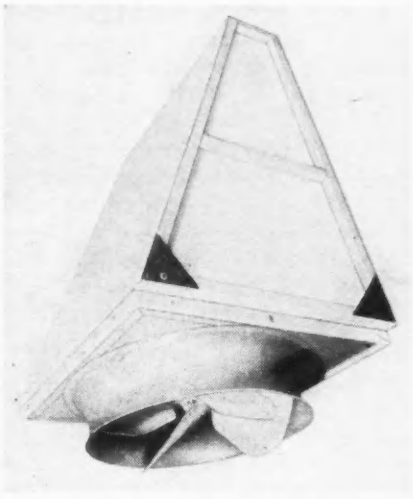
▶ SVEN H. LINDQUIST, research engineer member of the staff at California Institute of Technology, died in Alhambra, Calif., on February 22. He was 52 years old. During the war, Mr. Lindquist was research engineer for Lights, Inc., Alhambra.

▶ WILLIAM T. CONLON, who helped develop the LST Navy landing ship, and formerly identified with the Superheater Co., New York, died of a heart ailment on March 10 at his home in South Orange, N. J. He was 51 years old. During the war, Mr. Conlon served as assistant to the president of the Dravo Corp. For several years he was identified with the Superheater Co. in an executive sales capacity and as manager of the company's industrial department. Prior to joining Superheater he was associated with the Utica (N. Y.) Gas & Electric Co.

NEW EQUIPMENT

Ventilating Fan Unit in "Package" Form

DEVELOPMENT of a new, prefabricated suction chamber reported by Holcomb & Hoke Mfg. Co., Inc., Indianapolis, Ind., is stated to make the ventilating unit a completed "package." The chamber was designed for use with the company's ventilating fans. The "package" unit includes: the fan, the chamber, a time switch, and two types of shutters.



The chamber, shown with the fan in the assembled position, is reported to provide a leak-proof enclosure between the fan and the shutters. The unit is constructed with a metal-reinforced wood frame, and has self-sealing joints and panels of sound-absorbing material.

One style of shutter is designed for ceiling installation and the other for sidewall. Both are of flush-type design and function automatically in coordination with the fan. The time switch operates on a 24-hr. cycle and provides automatic operation of the fan. Both chamber and fan, when installed, rest on a vibration-damping material. Fans are built in a variety of sizes suitable for installation in all types of industrial, commercial and domestic buildings.

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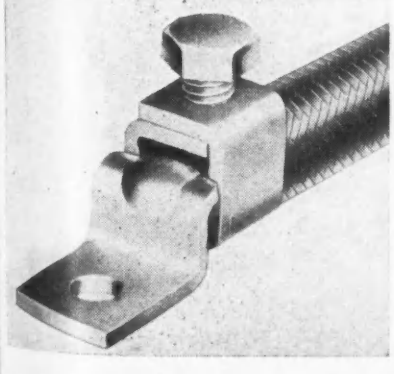
Lug Provides for Tongue Change without Body Change

A NEWLY DESIGNED Lug-it has been announced by Thomas & Betts Co., Inc., 36 Butler St., Elizabeth 1, N. J. Changing to any style of tongue required without a change in the body design is reported accomplished by the construction of the unit.

The design is available in four sizes which will accommodate solid or stranded conductors from No. 14 to 4/0. The units are made of bronze and have a double thickness at the screw threads. This double lap, with each lap threaded, is said to squeeze the screw during tightening and to lock it in place. The tongue, which is serrated, travels through the body providing direct contact with the wire. The unit is reported as Underwriters approved.



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New Spot, Flood Lamps Reduce Over-All Length 2 In.

DEVELOPMENT of new, compact, 150-watt PAR-38 projector spot and projector flood lamps has been announced by the General Electric Lamp Department, Nela Park, Cleveland, Ohio. The new lamps, which are supplementary to the standard line of projector spot and flood lamps, are equipped with side prong bases, thus reducing lamp-and-socket over-all length approximately 2 in., permitting a like saving in over-all fixture thickness, the company reports.

The new lamps were developed for use in lighting equipment combining fluorescent and filament lighting to facilitate streamlining. In addition, the new lamps may be utilized in such installations as recessed in ceilings, show windows, display cases and similar applications. The side prong base fits standard female separable connectors, but should be used only with heat resistant connectors, the company states.

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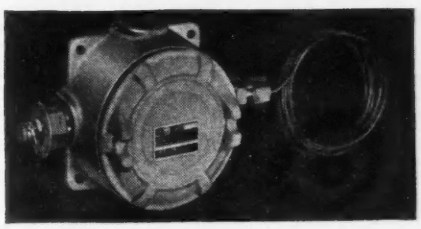
Explosion Proof Thermostat Covers—120 to 600° F.

A NEW remote bulb thermostat of the explosion-proof type has been developed by United Electric Controls Co., 69-71 A St., Boston, Mass. The control, known as Type EJO, has an external calibrated adjustment with 120 deg. F. or 250 deg. F. range in models covering −120 to +600 deg. F.

Four remote bulb styles are available.



Electrical ratings are: 1,200 watts, 150-230 volts a.c. non-inductive; and 300 watts, 115-230 volts a.c. inductive.

The mechanism is located in an approved housing, the cover of which is threaded for easy removal for inspection or maintenance, the manufacturer reports. The control may be mounted in any position on a flat surface. The housing is tapped, ready for installation of electrical connections.

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Reverse Polarity Welding Electrodes in 3 Diameters

FOR direct-current reverse polarity welding only of low alloy cast steel or low alloy high tensile strength rolled steels in all positions, the new AP-MO electrode, available in three diameters from 1/8 in. to 5/32 in., is announced by Westinghouse Electric Corp., Pittsburgh 30, Pa.

This electrode is designed for making butt and fillet welds in all positions, and welds made with it meet the he-

quirements of A.W.S.-A.S.T.M. tentative specifications for Iron and Steel Arc Welding Electrodes, Classification E-7010, the company reports.

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Electric Arc and Oxygen Used in Cutting Metal

EQUIPMENT has been developed to provide a new method for handcutting or piercing stainless and stainless clad alloy steel, aluminum, bronze, brass and various other metals. The process, known as the Arcos Oxyarc process, utilizes a stream of oxygen in an electric arc.

The equipment consists of a specially designed holder and a tubular coated rod which is consumed in the process of cutting. The process can be used on either alternating or direct current. The manufacturer reports that the "knack" of cutting can be acquired in less than an hour. The equipment can be used in any position and is reported to cut metal in any desired shape. The process was perfected by the Arcos Corp., 1515 Locust St., 420 Gulf Building, Philadelphia 2, Pa.

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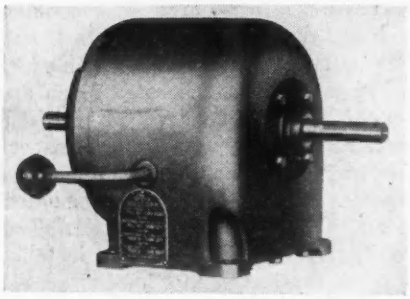
Selective Speed Drives Available Up to 1 Hp. Rating

A NEW ADDITION to the company's line of selective speed gear-shift drives has been announced by Lime Electric

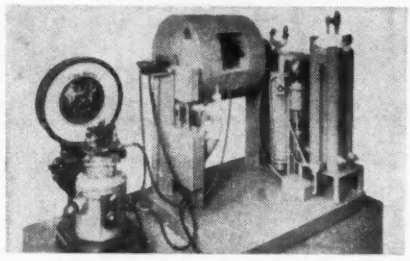


Motor Co., Lima, Ohio. The new drive, identified as Type RD, is designed to motorize machinery requiring selective speeds, and can be used with any standard motor of ¼ to 1-hp. rating.

Gear ratios are 1 to 1, 1.33 to 1, 2 to 1, and 4 to 1. The new design is actually a 4-speed transmission. A unit cast gear bos is said to provide permanent alignment. Gears and bearings are lubricated by a permanent oil bath.

The shift lever is available in four optional positions. A selection chart on the front of the case facilitates selection of output speeds. The unit will operate in either direction.

New Process Developed for Thermoplastic Materials



A NEW PROCESS for compounding thermoplastic materials has been announced by Hungerford Plastics Corp., Murray Hill, N. J. It is reported as applicable to nearly all materials requiring the addition of a liquid plasticizer, to eliminate the use of solvents and slurries, as well as the usual steps of combining the materials into a fused mass, mechanical working, hardening, and grinding.

The manufacturer states that with the process, the flake or resin, dye, pigment, stabilizer, extender, and filler are charged into a compounding chamber which is rotatably mounted. During rotation the liquid additives are spray-injected into the chamber, after which the material is dehydrated by filtering hot dry air through it as the chamber continues to rotate. The material, which remains in powder form throughout the process, is reported as then ready for feeding into standard molding and extruding equipment.

Equipment utilizing the process, called the Plastimaker, is manufactured in 40- 150-, 300-, 600-, and 1,000-pound capacities. It is reported as usable on wire insulation and is available on a licensing and royalty basis. The unit illustrated is the 40-lb size.

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Reversing, Separate-Circuit Multipole Sequence Relay

A NEW reversing, separate-circuit, ratchet-operated, multiple sequence relay has been introduced by Struthers-Dunn, Inc., 146-150 North 13th St., Philadelphia 7, Pa. Known as Type 96AFA, it is adaptable to numerous applications involving the addition and subtraction of loads, as in switching in or switching out individual units from a bank of capacitors.

It is a two-coil relay. One operating coil steps the cam shaft forward, a step at a time. Similarly, the second operating coil steps the shaft in the reverse direction. Mechanical stops limit the forward and reverse travel of the shaft. In installations where there is no control over the number of impulses that can be transmitted to the coils, it is recommended that normally closed contacts be included in each coil circuit. This results in opening a coil at the conclusion of each sequence, thus preventing possible mechanical damage from an excessive number of impulses in one direction, the developers of the new relay report.

Standard ratchets supplied have twelve teeth. Thus a total of twelve contacts may be obtained in a sequence, with no more than six separate contacts between each pair of bearing supports. Operating coils are for a.c. use only.

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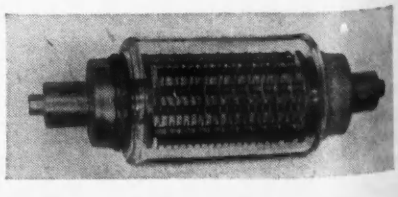
Vacuum Condensers Handle High Voltages and Currents

A NEW LINE of vacuum condensers capable of handling high voltage and high current simultaneously has been reported by the power tube division, Raytheon Mfg. Co., Waltham, Mass. The RC100-20, the first in the new line of condensers, has a capacitance of 100 uuf. and is designed for tank circuits and may also be applied in plate blocking or in plate bypassing functions. Other ratings are: peak rf. voltage, 20,000; d.c. voltage, 16,000; rms. current, 60 amp.; frequency, up to 30 mc.; and ambient temperature, 50 deg. C.

The 60-amp. fuse clip may be used for contacts where the normal rf current is less than 30 amp. However, the company recommends that a collet or other machine contact be used when operating at rf. currents in excess of 30 amp.

Among the construction features reported are silver-plated copper contact terminals, copper-to-glass seal, and a multi-plate assembly which is brazed into a single unit. The company reports that these nickel plates are assembled with silver-plated copper spaces brazed between them to provide a rigid construction and to thereby eliminate audio frequency-mechanical resonances in the condenser.